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THE GREAT WAR AND GERMAN FORESTS

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[The noted author of this article said in a letter accompanying it:—"In general it's my private opinion that Belgium will not have wood enough left for toothpicks when the war is over; for it's no joke to warm a million men round the bivouac fire on successive cold nights; and as you know, soldiers in the enemy's country are apt to be careless! Even WE were such in the civil war!"—Editor.]

THE Editor of AMERICAN FORESTRY pays me the compliment of calling upon me for a contribution that shall include the Great War and its effect on forests—another way of saying that men and trees live for one another; and no tree can suffer without an injury to mankind.

Forests were the foundations of German greatness. Need I recall ele-

LARGE SILVER FIR AND REGENERATION OF SAME SPECIES

IN THIS FOREST ONLY THE CROOKED AND DEFECTIVE TREES HAVE BEEN CUT DOWN. THE PRESENT OVER STANDARDS WILL BE REMOVED IN TEN YEARS. BADENWEILER, SCHWARTZWALD—BADEN, GERMANY

PILES OF CORDWOOD AND FAGOTS
SHOWING HOW THE GERMANS UTILIZE WHAT IS USUALLY WASTED IN AMERICAN WOODS AND FORESTS. SCHWARTZWALD, BADEN, GERMANY

mentary history to your minds? In 1806 Napoleon thrashed the Prussian army so thoroughly at Yena that it never ceased running until it ran into the arms of the Russian Alexander on the banks of the Memel. Out of deference to this Muscovite ally, the great Corsican refrained from incorporating Prussia as a province of France. He only took away the best half of her territory and compelled her miserable King (Frederick William III) to disband his army—leaving him but just enough to police his diminished acres and parade before him at Potsdam.

Incidentally be it noted that in 1806 Napoleon not only robbed Prussia of military stores and art treasures but his army pillaged every cash box and savings bank in the land and left the land of Queen Louise so poor that even the Absolute King had to think twice before ordering a new suit of clothes.

In these straits God raised up the Grand old Stein. He was not a Prussian—few of Germany's great men have been Prussian; but he was a great political diagnostician and feared no man—either on or off the throne. The Prussian King cordially disliked this man of iron as he disliked all but those who flattered his many weaknesses. But there are times when a surgeon must be called—even a hated one. And as it was with Prussia in the darkest days of her history, the King needed money—and it is usually only when the Royal pockets are void that popular clamor gets a voice. The Courtiers who had helped Frederick William III to the disgrace of Jena could do nothing for him but wring their hands and curse

ROAD THROUGH GERMAN FOREST
ALL OF THE TREES ARE STRAIGHT AND STRONG AS THE WEAK AND OTHERWISE DEFECTIVE ONES HAVE BEEN REMOVED

Napoleon; but this did not pay salaries. At last the boldest ventured to beg their master to call in the famous Doctor Stein; and at last with a wry face the sour King consented and Stein came sternly to the Royal bed side.

Stein at once applied the proper remedies; money was raised—the King also. Stein immediately thereafter was dismissed in disgrace, as are all such as tell the truth above a whisper.

But before this happened Stein had given to Prussia and the world a forest system which has not only enriched enormously the State primarily inter-

ested but has strengthened her very much for war purposes.

When Baron Stein sought to raise money for the King he looked about for something that he could pledge by way of security—he looked hopelessly until he came to the wilderness of forests lying between Hanover and the Russian border. These were of indefinite capacity and had been hitherto conducted in the reckless manner characteristic of latter-day forestation in this country. The wood was at the mercy of government officials who received salaries from the public purse but were of little more value than the so-called Fire Wardens of our New York State townships.

In parenthesis let me say that not long ago we had a fire on the eastern slopes of the Catskills that destroyed several hundred acres of valuable woods all within a few miles of farms and villages. The town supervisor knew nothing about the fire when I called him on the telephone—after the fire had been burning three days. Many farmers declined to come out and fight the flames because they had not been summoned to do so by the Supervisor who is also Fire Warden under the State law. Fortunately after five days, and without the assistance of the nominal Fire Warden, this fire was subdued, but only after serious injury to dozens of woodlots in this section.

The Prussian forests of 1806 were not quite so wastefully managed as are ours of 1914, but still left much to be desired from the standpoint of so thorough a man as Stein. He at once organized the schools which are today models for the world and in which the great army of Foresters and Game Keepers are trained for their high calling. And it is indeed a high calling, for it is not merely that of logging and fighting fires—serious as is that part of a forester's duties. The Herr Forester of Germany is the peer of any man in culture and social position, for his education has been long and thorough before he has been allowed to control so vital a part of the state as the forest! He must be not only familiar with the trees as a lumberman, he must also be a botanist, entomologist, zoologist, mineralogist—indeed must be an all round student of what can injure or help a tree in every season.

For more than forty years I have been an almost annual tramper in the forest-clad mountains of Germany and Austria; sometimes diversified by canoe cruises through sylvan wildernesses no less carefully guarded by the highest human forethought.

As an American, the first thing to captivate my eye and understanding was the care taken to prevent fire. Every forest is divided into small squares with a clean broad lane on each side. Thus a forester can look for miles down these pine tree canyons and quickly note a fire—or a poacher. Moreover, so carefully are the forests mapped that by preconcerted signals the other foresters can be called to the exact spot without loss of time.

If the reader has ever had one experience in tramping through an American forest like those of the Adirondacks thirty years ago he will know what it means to have clean broad lanes at regular intervals instead of a tangle of fallen logs, brambles, wild grape vines and tough bushes.

The German forest is clean under foot; whereas with us the farmer who has cut some telephone poles or railway ties leaves the branches to feed the next fire which may be started by a careless match.

Baron Stein soon faced the King's creditors with something tangible—a scheme for treating all the Royal forests as part of the national treasure. The King made over this formerly private perquisite to the State and the State in turn now borrowed money from Holland on this security alone; I had almost said on that of Stein! It reads strangely today, yet our own history tells us of times when a private citizen had to endorse the notes of the United States before they could produce cash!

You will pardon me for not burdening this article with statistical figures—those interested can easily supply this deficiency and myself am eager to leave my desk and start once more for the woods—my most congenial sanctum.

But before closing let me record the conclusions to which a long life has

A Stand of Spruce in Bavaria, Germany

brought me. The United States should treat our forests of every kind as a National Concern—not a private matter. Even the States are individually incompetent on account of the forests being frequently at the boundaries.

The normal value of wood lot land in the settled portions of the country is barbarously low in price because the farmer can have no protection from fires and not very much from depredation of other kinds. Today I am forced to cut down all my chestnuts because of a blight which could never have done so much harm had a German Forest Administration existed.

We need National control of every patch of woods in this country and this control should be wholly free from political influence.

As a farmer I welcome such control, for I know that in Germany—after a test of more than 100 years—the individual German forest owner would no more revert to the crude methods of pre-Napoleonic times than would we

abolish National control of our navigable streams.

Maybe you will smile when I say that in spite of the immense increase in German population and the consequent increase in farm values, Germany today has more wealth in her forests and a more abundant supply of game than at any time since the days of Stein!

Today you can shoot more and better game in any part of Germany than in the most favored wildernesses of this country merely because the game laws in Germany are honestly administered whereas in New York State (at least) they are something of a popular joke.

Socialism does not frighten Germans as it does us, because Germans trust their rulers—and especially is this true in the matter of forest. The State can afford to wait half a century for a new tree and thus to spend millions in reclaiming land for forest purposes—but few farmers can let their capital lie so long idle—and exposed to so many risks.

The German State feels responsible for the water-sheds, and acts on the principle that people who have good water to drink have scant excuse for quenching their thirst by other means. In New York State we have annual epidemics of typhoid in many of our country towns because the government has no adequate control of the water-sheds and our people drink more than they should from streams that flow through back yards where the latrine is a conspicuous ornament.

Germany does what private owners can rarely do—control the streams and forests in the interest of navigation no less than fish supply. In this State we have poisoned the noble Hudson no less than every other stream by permitting private owners first to cut off their timber without providing for reforestation; secondly by allowing sewers and factory waste to do their worst.

WAR NOTES FROM FRENCH FORESTS

[The following notes from "Revue des Eaux et Forêts, translated by Mrs. L. van Raucke from the January issue of that French forestry periodical are decidedly interesting—EDITOR.]

THE semesters of 1913–1914 of the National Forest School of Nancy, whose regular term in 1913 had been shortened, due to the fact that the military law of August 7, 1913, went into effect, had just closed at the moment when war was declared. Most of the higher officials of the school and experiment station immediately went into service as heads of battalions in the territorial army, while the adjutants and scouts were mobilized into the units of forest chasseurs.

"All the students have been incorporated into the active fighting troops and, as we hear from the lists published, many among them have already fallen as victims of the war. The Administration may well be proud of these young men, one of whom has already been decorated with the cross of the Legion of Honor.'

"The school itself was converted into a hospital during the month of August; beds have been installed in the recitation rooms and gymnasium and even (for the summer only) in the storerooms. The lecture amphitheater No. 2 has been transformed into a linen room. The cabinet of one of the professors is used for dressing wounds. The students' dormitories are reserved as a rule for the officers and non-commissioned officers. Naturally, the garden is at every one's disposal. This temporary hospital constitutes an annex of one established in the neighborhood at the Jeanne d'Arc Lyceum, and forms a part of the sanitary stations established by the women of France.

"The soldiers who are slightly wounded, whose number has sometimes exceeded 150 men, officers who are ill, and convalescent privates have occupied the hospital and all have seemed to

carry away a grateful remembrance of their sojourn here. The school museum has been often visited and has been of much interest to troops of different nationalities who have been collected at the hospital and who at some later period may be able in their own countries to tell of the Forest School at Nancy.

"The school buildings fortunately were not damaged by the shells and bombardment of the night of September 9, nor by the bombs thrown by German aeroplanes September 4, October 13, and the latter part of December, 1914.

"All promotions of foresters have been suspended during the war. The promotions planned for 1914 will be valid for the year 1915, if hostilities cease."

* * *

A report of the army staff (Bureau No. 4) dated December 11, 1914, proposed the creation of a military commission of forests, similar to the military commission of navigation, with equal powers, for supplying wood to the army, and the following Decree was issued:

Article 1. A military forest commission is created to act in connection with the general staff of the army, under the same conditions as the military commission of navigation, with the additional duties of preparing by all means available the wood supplies of the army. (Names of members of this commission are given.)

* * *

A decree forbidding the exportation of walnut timber declares that after December 4, 1914, the exportation, reexportation from warehouses, supplies in course of transit, or transhipment of walnut timber, round, square, or sawed, is prohibited. Exceptions to this decree may be accorded under conditions determined by the Minister of Finances.

* * *

An officer in an infantry battalion writes from the forest: "We have been on the frontier for two months and make reconnoiters every day in the dense forests which surround X. . . . , in order to surprise the patrols of the enemy, or to make sudden attacks which are often successful. The forest guards familiar with the country would make very useful guides in these forests which we generally traverse at night. Unfortunately, they have all been mobilized." It may well be asked, if it would not be better, instead of grouping the forest guards in companies which are not of very great assistance in the National defense, to place a certain number at the disposal of any regiments who are fighting near the district in which their duties lie in time of peace. They could render important service here in guiding troops on their night marches, organizing ambuscades, etc.

Meeting at Panama-Pacific Exposition.

Each member of the American Forestry Association is invited by the Board of Directors to attend the meeting of the Association at the Panama-Pacific Exposition at San Francisco on Wednesday, October 20.

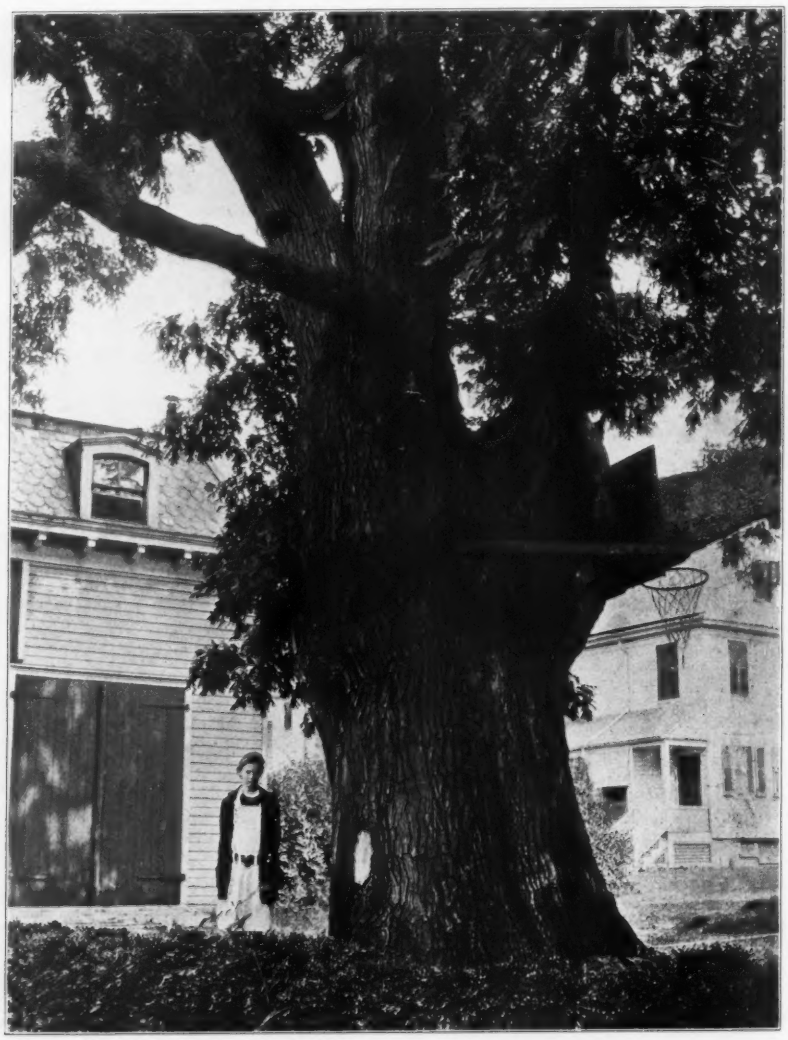
The whole week of October 18 will be devoted to forestry, fire protection and lumbering and the allied subjects will attract, it is expected, a very large attendance.

The Society of American Foresters will meet on Monday, October 18; the Western Foresty and Conservation Association on Tuesday, October 19; the American Forestry Association on Wednesday, October 20; the Pacific Logging Congress on Thursday, October 21; and the two following days will be spent in visiting lumber camps in the magnificent red woods.

FLUSHING'S OLDEST TREE

By EVERETT P. MARTIN

FLUSHING, Long Island, is noted for its trees. The soil and climate are such that a great variety of trees and shrubs will grow there. One of the largest Cedar of Lebanon in the country, 13 feet in circumference, 7 feet from the ground, 62 feet high, 75 feet in the spread is there. It has the largest weeping beech in the United States. An apple tree



FLUSHING'S OLDEST TREE
THIS IS A FINE WHITE OAK IN THE YARD OF ELLIS PARKER BUTLER, THE AUTHOR

160 years old, still bearing good apples. A cherry tree 10 feet in circumference, 5 feet from the ground, branched out like an oak, bearing yearly large crops of fine white cherries. Tulip trees that were good sized when the British soldiers camped under them. Besides these there are many other rare and beautiful specimens of trees and shrubs. But none is of more interest or more worthy of a visit than Flushing's oldest tree.

A sturdy white oak stands on a stretch of level land, that must have appealed to the early settler as an ideal claim. On this same flat, within the memory of the oldest inhabitant, there stood three other white oaks, all of the same general outline; large low trees with wide spreading branches. The oldest oak is 17 feet in circumference, 5 feet from the ground; 18 inches above the ground it is 19 feet around. Its spread is 90 feet. One branch is 53 feet 6 inches long, while the tree is only 54 feet high. Professor Asa Gray, the botanist, estimated that the last surviving mate to the old oak, which stood on Parsons Avenue until 1895, was 600 years old, and this is probably as old.

It must have been a large tree probably two and one-half feet or more in diameter when the first white man saw it. When allowance is made for the curf in chopping, the butt cut would be two short even for a fence post. It was at that time as it is today practically good for nothing but fire-wood and that could be obtained more easily than by chopping down such a tree, and it is barely possible that its various owners, like the present one, Mr. Ellis Parker Butler, may have admired the tree.

The old monarch still stands in Mr. Butler's backyard on State Street. The good fortune that has been with it all these years has placed it where it does not interfere with electric wires and sewers, and gas pipes do not interfere with it. Barring accidents it ought to live for many years to come.

TEXAS FORESTRY LAW

TEXAS has awakened to a realization of the needs of protecting its forests and the legislature which recently adjourned passed a state forestry bill which the Governor signed. It has now become a law. The bill provides for the appointment of a State Board of Forestry of seven members, the Governor, Commissioner of the General Land Office, Commissioner of Agriculture, president of the University of Texas, president of the Agricultural and Mechanical College of Texas, and two citizens, to be chosen, so the bill expresses it "with reference to their knowledge of, and interest in, the planting and cultivation of trees in prairie regions, the preservation of natural forests, the foresting of denuded land, and the protection of stream flow."

The Board is to formulate plans for carrying on practical forestry, and to supervise all matters of forest policy. A state forester with a maximum salary of $3,000 a year is to be appointed by the Board of Directors of the Agricultural and Mechanical College.

The bill carried an appropriation of $20,000, which was cut in half. The expectation is, however, that when it is seen from practical work just how important to the State is a forestry law, succeeding legislatures will provide ample revenue for the department.

The new law permits the Governor to accept for the State gifts of land for forest reserves and provides for purchases of similar lands; it also permits cooperation with the Government under the so-called Weeks law in the protection of the forests from fire.

The American Forestry Association did what it could to arouse sentiment throughout the State in favor of the passage of a forestry bill. A State Forestry Association was formed and did active work for it and the broadminded lumber-

men of the State also gave their aid. J. Girvin Peters of the United States Forest Service also visited Texas and reviewed the situation for the members of the legislature.

The passage of the bill has met with hearty approval throughout the entire State, for it is apparent that in about thirty years southern yellow pine in Texas will have practically ceased to be an important commercial resource, unless the cut over forest lands, valuable chiefly for the growing of timber, are protected from fire and unrestricted grazing and managed in a way to insure continuous production. The importance to the State of the law cannot be over estimated. The next forward step in this direction which the State should make is to revise its method of taxing timber land to provide for the payment of taxes on such land under a system which will encourage private owners to grow timber as a crop.

WOODLOT IMPROVEMENT

EVERY farmer needs fuel; every farmer needs fertilizer; and every farm woodlot needs improvement. Why not kill all three birds with one stone? By judiciously planned thinnings the condition of the woodlot can be greatly improved; the material removed in the thinnings can be burned as firewood and the wood ashes left are so rich in potash as to make a valuable fertilizer.

The woodlot is, perhaps, the only farm crop to which the farmer has not considered it necessary to devote any care. His grains are sowed on carefully prepared soil; his vegetables are cultivated, and his fruit trees are pruned and sprayed; his forest trees alone are left to look out for themselves. This is the more remarkable when it is taken into consideration that any labor expended on the woodlot not only improves the final crop, but ordinarily pays for itself as well. No detailed technical knowledge is required for the work, all that is necessary is the exercise of common sense.

It is obvious that the trees in any woodlot are not all of equal value. Some are taller, straighter, thriftier, and of species which yield more valuable wood than others. It is also obvious that there is a constant struggle going on between the trees for light and growing space. The object of thinning is simply to give the best trees the advantage in this struggle by removing the poorer ones which interfere with their development.

First of all defective trees should be removed. This includes trees attacked by insects or fungi (conks), trees with fire-scarred butts, with tops broken off by wind or lightning, and in general all trees which are unthrifty from any cause. Next come the trees of poor form, such as very crooked or very branchy ones, which are interfering with the growth of better formed neighbors. And finally are the trees of less valuable species, such as dogwood, ironwood, and hornbeam. These not only take up space that might better be occupied by such species as oak, hickory, and ash, but also, as a rule, produce seed more abundantly and so reproduce themselves at the expense of more desirable trees.

While the wood removed in these thinnings is frequently of no value for other purposes, it can practically always be used to advantage for fuel. In this way the work can be made to pay for itself, particularly when the future use of the wood ashes for fertilizer is borne in mind. The essential point to remember in making such thinnings is that the woodlot is a tree society, in which the best trees should be given every chance to attain the greatest possible development by the removal and utilization of the unfit.

THE SPANISH OAK.
THESE WILL BE FOUND FROM SOUTHERN NEW JERSEY TO FLORIDA AND THROUGH THE MIDDLE AND GULF STATES.

TREE FRUITS AND FLOWERS

By WARREN H. MILLER, M. F.

I COUNT it as one of the privileges of my life in the forest of Interlaken to have the joy of witnessing, each year, the grand process of the forest regeneration. For, there is something majestic, imperial, in the onward sweep of a whole forest of trees, from the first leaf buds of April, through the beauteous flowering period of May and June, through the full glory of ripening in July and August, to the gorgeous days of October when the ripe harvest falls in countless millions of nuts and seeds, Nature's one and eternal answer to the problem of the world's continuance. It is all on so grand a scale; comparable only to the mighty march of the constellations overhead, and, to live in it, and be in it and of it, is one of the delights of a forest dweller.

For they are all about me, thirty-seven species of American native trees, in countless individuals of their kind, and, each year, with the coming of the first bluebirds and robins, I look for those red splotches in the forest that tell of the blossoms of the red maple, filling every vagrant zephyr of the spring air with their heavenly perfume; I look for the stream banks, yellow with the catkins of the black willows; the moist ravines white with the tender flowerets of the shad-bush, and, once in a while I encounter the pale maroon blooms of the burning bush and the Judas tree telling of a thicket containing these trees.

Then comes the great Twelfth of May, when the leaves are fully out, and with them the flowerets of the oaks, ashes, hickories, walnuts and gums, while the pink and white blossoms of the wild crab, wild plum, and cherry make every brook-side a flower paradise; and then, crowning glory of May, all through the forest the huge white bouquets of the flowering dogwood give to sweet Nature her ample bridal veil.

Then comes June, the period of reproduction, redolent with the odors of tulip tree, eastern cherry, linden and mountain ash; when the bees are busy and all nature is bathed in a mist of pollen, the inauguration of the busy ripening period to follow. Finally, the golden days of September and October, when the rich harvest of brown acorns, scarlet blue and purple berries, full-blown catkins and bursting cones gives to the world the sumptuous yield of Nature's labors; when the year's work is done and every living creature hunts and is hunted; when all the denizens of the forest are full to repletion with its bounty and are storing its rewards for the winter to come—the glorious Hunter's Moon; the season of happiness and thanksgiving since the beginning of the modern world.

THE CATALPA.

THIS TREE IS A WONDERFUL BLOOMER, BEING COVERED ANNUALLY LATE IN JUNE WITH A PERFECT SHEET OF FLOWERS NEARLY WHITE AND TINGED WITH PURPLE.

To the lay mind but few trees outside of the dogwood and one or two others have any flowers at all, yet, if they only knew, what a field for enjoyable study and investigation lies right before their eyes! For the man who does not pretend to be a forester, but rather a forest lover, having an abiding love for just trees, and a lasting enthusiasm for their study, the tree fruits and flowers will furnish an inexhaustible storehouse of information and pleasure. There comes a time when all the wild flowers that do dwell in the forest are well known, familiar, less interesting because so well known; and then it is to the trees themselves that the forest lover will turn for further fields of exploration. For, I hold that the tree flowers are more interesting than the prettiest plant flower that carpets the forest floor. Things are done on a much grander scale up there aloft in the tree crowns. In most cases Nature has found it necessary to divide the tree flowers in half, putting the stamens or pollen-producing element into one flower and the pistil or seed-producer into another, a rather incomprehensible phenomenon to the flower lover, who is used to the complete flower containing in itself both stamens and pistil, such as is found on most plants. But the plant has swarms of bees, flies and insects to transfer pollen from one flower to the next, so it need not bear a self-fertilizing flower, whereas in whole families of trees the individuals, by division of their own flowers, are able to set seed without requiring the pollen of another individual of the same species growing near it. This applies to all the oaks, hickories, willows, maples, walnuts; in general to all the tree flowers that do not depend upon flower display or fragrance to attract bees.

Let us examine together the flowers and fruits of some of our more common forest trees and see if they are not as interesting as any wild-flower that ever bloomed. We might divide them roughly into, the useful trees; the ones with handsome, showy flowers; and the conifers. May is the great month for tree flowers; set aside your study dates for going into the forest in that month, or you will be too late to see the great

majority of tree flowers. Leave June for the "wild-flowers," so called. Early in April all the maples will be in bloom, the flowers coming out and setting fruit before the leaves. If there is a red maple anywhere about, your nose will tell you of that fact. A wonderful perfume will be wafted through the forest; look for a dark red blotch in the tree tops; it is the crown of a flowering red maple. The flowers are small, red with yellow stamens, a pretty enough branch for house decoration anywhere. The sterile flowers are the most showy, the fertile ones being broader, with thin red calyx. All the other maples except the mountain maple flower early; our two old friends, the rock maple and silver maple, having small greenish-yellow flowers, much of the shape of the red maple ones. The latter and the silver maple set fruit early and by mid-May the pink samaras will come whirling down, so that the crop of young trees for that year will already be well under way by fall. The rock maple keys, on the contrary, do not come down until late fall.

Looking further for tree flowers in early spring, we would visit the stream banks on the lookout for the gray catkins of the pussy willow, often out in late March, and for the yellow pendants of the black willow. These are compound flowers, the despair of the museum flower preparation men, for each catkin consists of dozens of tiny flowerets, each complete in itself, and its interstices are well filled with silky hairs whose function appear to be to protect the pollen from being all blown away at once by the too-vigorous winds of early spring.

In the middle west, where the Judas tree is common, its early spring tree flower greets us while yet the violets have hardly opened out. It is a slender tree growing in the thickets and is profusely ornamented with the pale, pink-maroon blossoms, reminding one somewhat of the bleeding heart of the home garden. Occasionally this tree is met in the East, so one should not despair of finding a specimen during the early spring rambles.

Carrying us on into great May is the service-berry bush, coming out late in April, and conspicuous with its sprays of white blossoms, fragrant and beautiful. It fruits in June and July, yielding a reddish-purple sweet berry, and if there is any better jam than the "service berry" as made by the mountain men and backwoodsmen I have yet to taste it!

THE CHESTNUT.
THERE IS NO MISTAKING THIS BLOSSOM WHICH IS TO BE SEEN LATE IN JUNE OR EARLY IN JULY.

But now comes the glorious month of May, when the forest is loaded with flowers and one hardly knows where to turn first in describing them all. Most conspicuous of all is the flowering-dogwood, with its immense white-petalled

flowers, each with a purple spot at the base, the stamens forming a sort of green daisy center. In the fall both its leaves and its fruit are beautiful, the berries being brilliant scarlet in star-shaped clusters, and the leaves deep reds and purples. Its close cousin, the green osier or blue dogwood, also wants looking up in May, because, while its little yellowish-white racemes of flowerets do not come out until June, the leaves in May are highly ornamental,

THE WHITE OAK.
THE PALE WHITE AND PINK LEAVES OF THE WHITE OAK ARE TO BE SEEN EARLY IN MAY.

being a pale white with purple spots. Look for it along stream banks and forest swamp borders.

And, early in May, do not fail to note the young leaves of the oaks, particularly the pale white-and-pink leaves of the white oak, truly as beautiful as any flower. At the same time examine the sterile and fertile flowers of all the oaks. The sterile ones are long, knotty, yellow-green pendants, reddish in the case of the black and scrub oaks. They are much in evidence during that period when the leaves as yet are but scraggly ragged bunches of vegetation, just opening out from the winter buds. Most interesting of all are the future acorns, the fertile flowers, in general, for all the oaks, little scaly cups, with two or more reddish, hornshaped petals peeping out. Down in the center of these is the ovary, which will grow to an acorn when fertilized by the pollen from the sterile catkins growing in the same tree, and the scaly cup later becomes the cup of the acorn. Nature is taking no chances with such an important tree as the oak, and any one of them can reproduce itself without any other individual of the species growing near it. Some of the acorns will not mature until the second season after setting, notably those of the white, black, pin, scrub and scarlet oaks; while the red, chestnut, swamp, white, and overcup oaks mature their acorns the first year. In all the species the acorns come down early enough in September to sprout a good many of them, while the rest hold over on the ground through the winter if not eaten and start early in the following spring. The bountiful crop of acorns formed one of the principal sources of flour for the eastern Indians; such acorns as those of the white oak requiring only boiling and leaching to equal the chestnut in flavor, and those with more tannin in them, such as the red, required drying, pulverizing and leaching through thin buckskin until the water running out no longer held a yellowish tinge. The flour was mixed in a batter, and paper bread made of it by spreading on a thin stone over the fire, the result being a crisp crust, like modern breakfast foods.

Most delicate and beautiful of the May tree flowers are those of the apple family. Look in some moist dell, tinkling with the fall of a tiny brook, for

the small bush of the wild crab, covered thick with the pink-white blossoms so like our own orchard blooms as to cause one to wonder if a stray apple seed has not fallen there. Its close cousin, the wild plum, has very much the same fragrant pinkish blossom, but it is to be looked for in a different location, preferably sandy soil, either dry or moist, it does not seem to matter to the wild plum; I have found it in the sand dune barrens of Barnegat and bordering salt marsh swamps along the seacoast with equal impartiality. Its fruit is a small red plum, rather resiny in taste, and apt to make one sick if indulged in too freely. The Indians dried these plums in quantities for winter fruit supply. What with the tree fruits—berries and nuts—to say nothing of edible plants such as the wild bean and the Indian potato, the Woodland Indians never lacked for plenty to substantiate their meat fare.

Among the nuts, both the hickories and the walnuts are out in May. In all the hickory species look for long trailing catkins, yellowish-green in all species but the mockernut which has reddish stamens. These constitute the sterile flowers, while the fertile ones are small embryo nut shells with no corolla or primitive petal at all. The walnuts make a better showing, with their sterile flowers long green strings of little knotty flowrets having purple anthers, while the fertile flower is a green, tubular forerunner of the nut, with two long, deep-pink lobes of corolla protruding. These are really the stigmas, or that part of the pistil which receives the pollen from the sterile flowers. The white walnut, or butternut, has even a prettier display, with deep rose stigmas on the fertile flowers and long, brown, drooping catkins for the sterile flowers.

A most handsome tree flower, coming out in late May, is the catalpa or Indian bean. Native to the central West, straggling specimens, either accidental plantings or stragglers from the van-

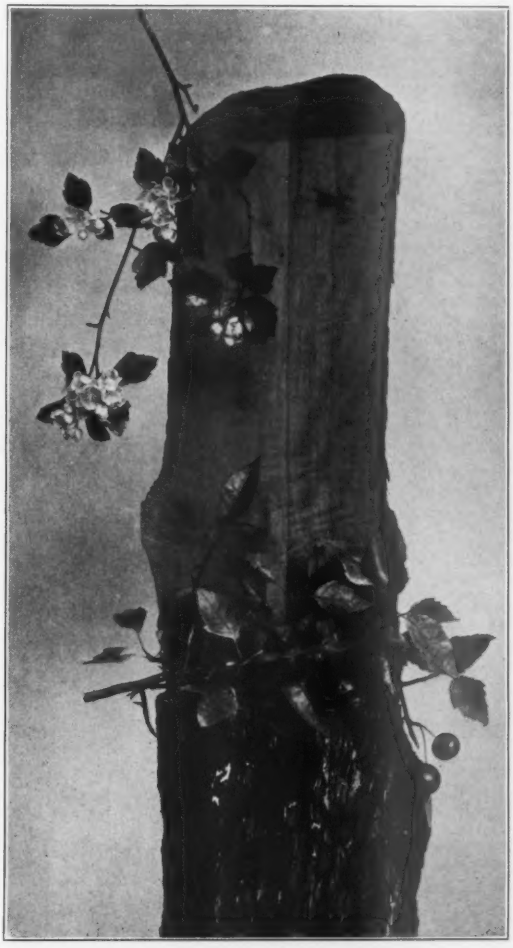


Photo by American Museum of Natural History.

THE WILD CRAB.

LOOK IN SOME MOIST DELL, TINKLING WITH THE FALL OF A TINY BROOK, FOR THE FRAGRANT BLOSSOMS OF THE WILD CRAB.

guard, are encountered here and there in the eastern woods. The flowers are abundant all over the tree, in big showy clusters, compound pyramids of forty or fifty bell-shaped white flowers with yellowish centers plentifully sprinkled

with small purple spots. Not a particularly pleasing odor, but a showy white display to view in the green forest.

Interesting because of its remote antiquity as the friend of man, is the ash family. Without ash spears and bows, ash arrows, tool handles, paddles and snowshoe rims, we would have been a long time fighting our way up from the level of the beasts. The history of the tree reeks with human gore, and more than one remote ancestor of our race has worshipped it as the tree which upheld the earth—which it *did* so far as he was concerned! All the ash varieties flower in May, and all have deep blood-red bunches of flowerets, like blobs of blood, scattered along the branches. The fertile and sterile flowerets are not greatly different, the former having a long red stigma which superposes the ovary, and later gives way to the samara or key, similar to the maple key, but long and thin like a javelin. These keys ripen in the fall and persist until midwinter when the violent gales, sweeping through the bare trees, tear them from the stems and drive them headlong through the forest, and thus Nature accomplishes the wide dissemination of the ash, for the tree uses so heavily of the soil that a grove of them would be an impossibility. Wolf of the forest though it is, and cousin of the peaceful olive though it is, give me one naughty, gory ash tree for all the olives in the world!

THE LOCUST.
THESE BLOOM IN PROFUSION AND ARE A MOST ATTRACTIVE FLOWER.

Another large family of trees flowering in May is the birch tribe. Not much to look at, but oh! what a debt mankind owes to the birch! so we will just give the green catkins of the family a look for curiosity's sake. Sterile and fertile, as is Nature's way with important trees; the sterile ones being showy catkins with tiny flowerets imbedded in a fuzz of green filaments, the fertile flowers, short stumpy catkins, made up of sheaves of what are later to be the wings of the tiny birch seeds. These will turn brown in autumn, the flower "blows," and the winged seeds fly far and wide on the October breezes.

Last of the May flowers to be examined, though many a lesser species must be passed by for lack of space, are the two gums and the beech tree. Liquidambar, the sweet gum, has a most peculiar flower, a sort of conglomerate of seed sacks, which starts in the early spring as a small, green, fuzzy button on a stem, and grows to a green, prickly sphere a little smaller than a golf ball. The sterile flower is an erect, compound bunch of flowerets which perish soon after the work of pollenization is done. Not so the other, which turns red-purple and then brown in the fall, and is finally blown off in the winter, so that any large clump of sweet gums is sure to have a grove of little ones surrounding it, the preponderance of them lying to the northeast because of the prevailing southwest breezes of autumn.

The tupelo, or sour gum, has an insignificant green flower scheme which

later develops into two green seeds on a long stem. These ripen to blue-black berries, sour in taste, but a tremendous delight to all song birds, for whom alone, not to speak of the

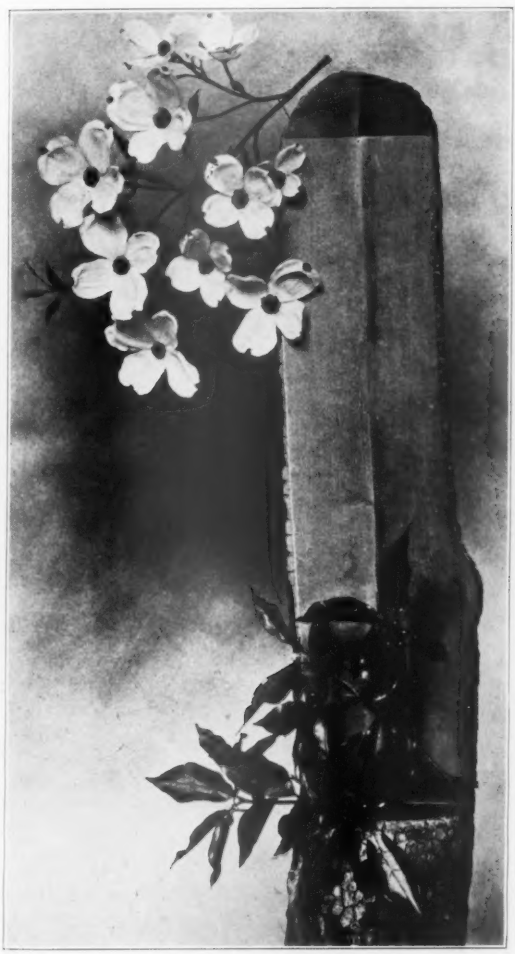


Photo by American Museum of Natural History.

THE DOGWOOD.

ONE OF THE MOST CONSPICUOUS OF ALL THE FLOWERING TREES WHEN IN BLOOM IS THE DOGWOOD.

gorgeous coloration of the tupelo's autumn leaves, I will go to considerable pains to spare every sour gum on my place whose room is not urgently wanted.

The great beech, without which and plenty of him no eastern forest is complete, puts forth in May huge quantities of little button balls of compound flowerets which are its sterile flowers; while, tucked in close to the twigs, are odd little growths resembling tiny green barnacles with a pair of tentacles extended. These grow into green burrs, turning brown in autumn, and bursting open to discharge two three-cornered seeds, sweet and edible, which are the beech nut, beloved of all forest dwellers.

Going over into June, the flower show in the forest is about over; but still perfumes greet your nostrils, and you may come upon the big showy yellow-and-red blooms of the tulip tree, whole clusters of tulips dotting the immense wall of the tree like Christmas candles. The simile is further carried out when the fruit develops, for each one is a tight green sheath of upright conical shape, composed of numerous winged seeds compactly assembled. These open and scatter in the fall,—a tiny seed, forsooth, for such a mighty giant of the forest as the liriodendron.

When casting for black bass among the lily-pads in June, should your nostrils be assailed by a most heavenly perfume floating out over the water, look along the banks for a flowering wild cherry, of the black or choke variety. It will be covered with the white spikes of compound cherry blossoms, fragrant, giving off billows of perfume and calling all the bees for miles around. I know of no sweeter odor in the forest, and, furthermore, have not the least objection to eating all I can reach of the reddish-black cherries when they ripen in September. The wild red cherry, which behaves much as our cultivated varieties, with similar flower and fruit, budding in May and ripening fruit early in July, is sweeter but by no means as

abundant or as widely distributed as the black cherry.

Two old friends which flower in June are the holly and persimmon. The former bears small white blossoms, soon setting fruit and developing a green berry which turns the characteristic glossy scarlet late in the fall, and is, alas! too much sought after around Christmas time. The persimmon blossoms are yellow, both sterile and fertile, shaped like tiny urns. The fertile flowers are the solitary ones. The fruit is well known to every country boy who ever roamed the woods. Translucent orange in color, with a purplish sheen, it is good to look at in the fall, but not to eat until late in November when the frost has had a chance to mellow it. By that time the persimmon is almost black in color and is delicious in flavor. One of the delights of 'cooning of a moonlit night is not only the following hounds and the excitement of the chase but the fine harvest of persimmons certain to be gathered in any good 'coon country.

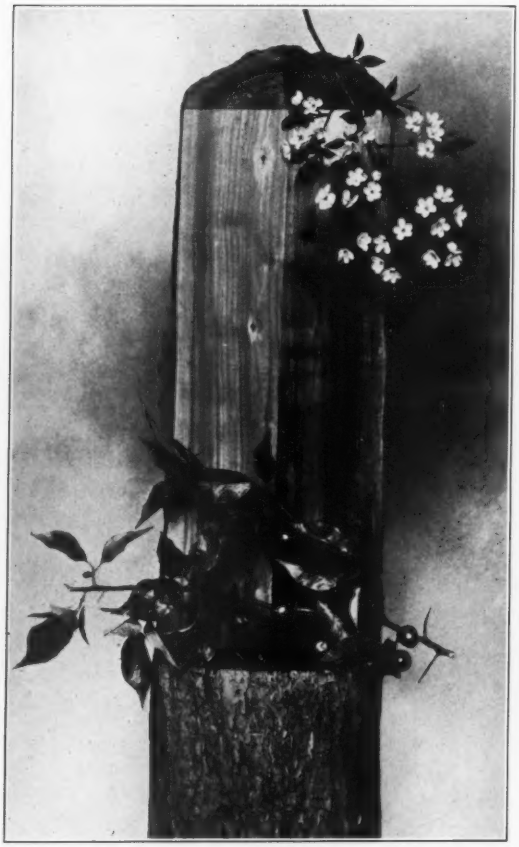


Photo by American Museum of Natural History.

THE WILD PLUM.
THESE ARE CHARMING WHITE BLOSSOMS READILY DISTINGUISHED.

A final tree flowering in June is the mountain ash, occurring along river banks, swamp edges and mountain ravines all over the East and as far West as Minnesota. Its blossom is a large flat umbrella of white flowers, perfect, each one setting fruit to a berry which turns bright red and stays on until winter; a most ornamental little tree, a pleasure to meet in any forest any time from June until December.

Turning to the evergreens, you would be surprised to learn how beautiful and interesting are their flowers. I have lots of them, of many species about me in Interlaken, and never fail to watch them all closely during the flowering period. The pines flower late in May and early in June, the pitch pine leading off with handsome brushes of sterile flowers and spikes with lavender trimmings, which later develop into cones. The white pine puts out three or four brown pencils at each terminal bud which grow into the sterile flowers, while the embryo cones show soft pink-edged scales. When these are young, with green scales and pink edges, they are as pretty an object as grows in the woods. The two cedars, white and red, start flowering early in May, the white being covered with little purple flowerets which develop into reddish-brown cones, and the red cedar with purple-red flowers replaced later with the characteristic blue berry,

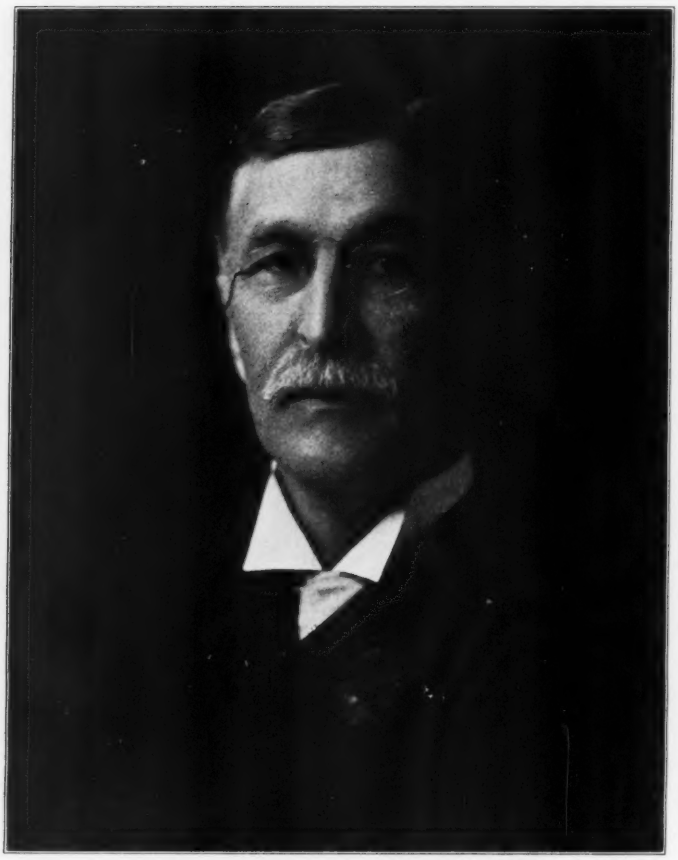
whitish underneath. The balsams, with their purple young cones and the yellow-red anthers of the sterile flowers, are always a welcome study in late April; and the hemlocks, flowering about the same time, with the crimson scales of the fertile flowers abundant all over the tree, make gay the springtime sunshine. The spruce tribe are out in May; in general, the flower scheme borders on purple for all the species; the red spruce shows reddish-purple sterile flowers with the scales of the fertile future cones a rose-purple. With the blue spruce, the same flower is a dark blue, tinged with purple; and in the white spruce the sterile flowers display red anthers, with pale red scales for the cone of the fertile flower.

Photo by American Museum of Natural History.

THE BLACK CHERRY.
THIS WILL BE MOSTLY FOUND IN THE EASTERN HALF OF THE UNITED STATES. IT IS ALSO KNOWN AS THE WILD CHERRY.

THE BLACK WALNUT.
THE FERTILE FLOWER IS A GREEN TUBULAR FORERUNNER OF THE NUT WITH TWO LONG DEEP PINK LOBES OF COROLLA PROTRUDING.

The great extent and variety of the flowers of the deciduous species is apt to make one give one's whole available time to their study, but do not neglect a visit to the cool ravines where the hemlock blooms in early spring, and to the warm sunny hillsides where you will surely find the pines and the red cedar. If there are any evergreens about your place, find time in the spring to get acquainted with their flowers. It will be a memory worth treasuring.



MR. JOSEPH N. TEAL, PORTLAND, OREGON
A VICE PRESIDENT OF THE AMERICAN FORESTRY ASSOCIATION

The instant question of forest conservation and the one pressing for solution is that of *use*. That forests must be protected from destruction of all kinds, that a vast public interest is to be conserved by their protection is now generally accepted. Attention must now be directed to encouraging and securing the greatest possible *use* of this vast national resource. Governmental agencies should from now on exercise the same zeal in securing the distribution of the manufactured product as they have shown in the past in protecting the tree. Only through *use* will results be accomplished. If this great national asset is to be realized on, if it is to serve its purpose, foreign and domestic markets must be opened up on a basis that will place one of the greatest of our industries on a sound foundation. The commercial and industrial side of the question is as important as that of protecting the forest from physical harm. In other words, *use of the product* is a most important part of its conservation, and without use it is difficult to see the necessity for wasting time or money in protection. Make the forests of value and they will be taken care of. Without this incentive there is little inducement for their preservation. It has been said truthfully forest conservation is now 90 per cent salesmanship and 10 per cent forestry.

JOSEPH N. TEAL,
Vice President, American Forestry Association.

DR. B. E. FERNOW
DEAN OF THE FACULTY OF FORESTRY, UNIVERSITY OF TORONTO, AND VICE PRESIDENT AMERICAN FORESTRY ASSOCIATION

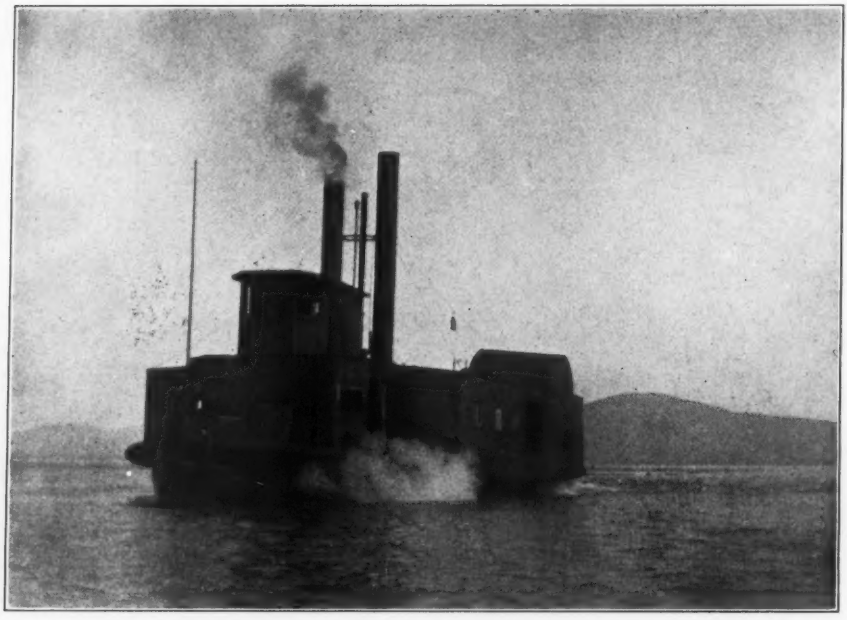
For more than a third of a century it has been my privilege to be more or less directly engaged in advancing the movement for a more rational use of the forest resources in the United States and Canada,—this time covering pretty nearly the whole period from the beginning of such efforts on this continent. It is a long time, and, contemplating the output of energy by a continually growing number of persons on behalf of this reform, one might be apt to feel discouraged at what has been accomplished. Hasten slowly has certainly been the experience!

The reason is that under our democratic institutions education of the people at large is first needful before any action can be taken; and such education sinks through only slowly.

Forestry is a business for the long run, and hence not very interesting to private endeavor: it is *State business*. The idea that a State may properly engage in business has only slowly and lately come to be realized in the United States. It was, therefore, a great triumph when we succeeded in persuading the Federal Government to change its land policy, namely of disposing of the public domain, and to create permanent forest reservations. It was a great accomplishment to have these National Forests placed under a competent technical administration. It was a noteworthy victory to commit the Federal Government to the acquisition of National Forests in the Eastern States, extending its conservative influence over areas for which the States themselves were unable to care.

The most strenuous effort of the reformers should now be expended in persuading State after State that State-managed forests are a necessity, for, in my opinion, private forestry on a large scale, such as is needed, will, except under special conditions, for the present prove economically uninviting.

B. E. FERNOW, LL. D.
Vice President, American Forestry Association.



THE POWERFUL TOW BOAT USED IN THE OPERATION

LAKING

By W. R. BROWN

IT WAS the still hour just preceding dawn, a time of almost supernatural calm, broken only by the intermittent puff-puff of our smoke stacks, alternating with the chug-chug of paddle blades as they churned the water. A few clear stars reflected into the infinite lake that stretched mirror like to the shadowy shores, and at the stern of our great boxlike boat, lay a vast floating field of logs, at which it tugged unceasingly, and which extended, blacker than the black water to lose itself in the night. Above, a dim light in the pilot house, and below, an occasional glow from the ruddy furnaces, alone told of human vigilance. The Captain was nodding over his wheel, and the stoker had chosen this propitious moment for a comfortable doze in the warm corner of the boiler room, when somewhere in the vague distance came the sound made by the splash of an oar, losing itself, and again becoming more and more regular and distinct.

Almost simultaneously with this definite punctuation of the night, arose the long, weird cry of the loon far up the lake, and at this peal of tremulous laughter the Captain shook himself from stupor, and with a characteristic tug at his hat, as if to assure himself of attention, went outside on the upper deck to determine the location of that mournful chuckle and read the potents of the dawn. Soon the cry of the wilderness arose again in the North, foretelling the wind that would surely come from that quarter with sunup, and, in the intenseness that followed the echo of those lonely notes, came again the regular creak of the oarlocks over the water.

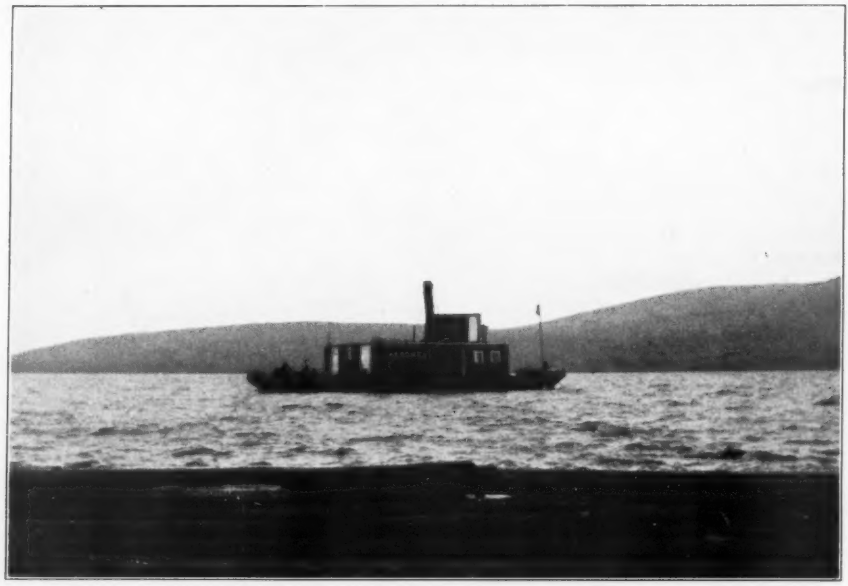
As the Captain climbed down the short ladder from the pilot house into

A Bateau

the furnace glow, we saw illuminated in half lights a man of short but stocky build, whose large square head was partially concealed by the broad brim of a felt hat pulled far down over one eye, leaving the upper features in shadow, through which sharp eyes shone with quick intelligence, and a firm square jaw framed in with the will of domination.

Over the bow, the dim outlines of a boat appeared in the mist, a line was thrown and a friendly hand given over the side, and as the messenger climbed on deck, the emergency that had brought him many miles that night in the darkness was disclosed, as both Captain and messenger wended their way to the cook's galley for a tin of daylight coffee. It appeared that at the head of the lake where many logs were being turned out into a bagging boom at the mouth of a river, the supply of surrounding boom sticks had run

Bateaux on the Drive



GETTING THE TOW OF LOGS ASHORE

short, and unless more were quickly brought, the rapid accumulation of logs threatened to break the boom and scatter before the wind the many thousand pieces enclosed. Such was the urgent request, and, it, coupled with the foreboding cry of the loon, determined the Captain to move quickly.

While the hungry emissary was routing out the fat cook to prepare a hasty breakfast of bacon and eggs, the Captain aroused the sleeping crew, and in a twinkling lanterns were moving about the decks and searchlights playing upon the white mists over the water. First of all the present tow of logs must be taken to the shore and securely fastened. So with much creaking, the port tow line was slipped around its post at the stern, and the great vessel pulling at the new angle slowly swung toward the shore. All was bustle; the boat's crew passed from one to another a long hitch line from the upper deck to a coil in the stern of their bateau, with cries of "snake her up;" the engineer blew steam from his engines, and the fireman furiously stirred the roaring grates. The stern of the bateau, being now heavy with rope, and the vessel close to shore, the crew jumped into it and ran along the seats to their oars, and at the call from the bowman to "head boat" churned the water to foam, while the line unrolled into the still water, as with measured beat they disappeared from view. Quickly a few sturdy trunks were encircled with the rope by the crew, and back again swiftly the bateau glided to catch the steamboat as it swung away on its mission of rescue.

At the turning-out dam we found the required line of boom sticks resting along the shore like the far famed serpent of the sea, and, as we made fast to its drowsy head and pulled away, the long coil straightened as if alive, and spray hissed from every joint in an angry protest, as we pressed forward with every pound of steam up the lake. The speeding boom in our rear proved to be a stable path for the adventurous crew, who ran out new hitches upon it with great unconcern and jumped through the spray from one log to another.

While we watched the crew from the rear deck, there was recalled an exciting

Sluicing Logs Through a Dam

incident resulting in four river drivers nearly passing in their checks. Ten sticks, held together by toggle chains, had been carefully worked around into the current above the dam by a boat's crew to be sluiced through for use below. This crew was rowing hard to straighten it, when the powerful suction at the gate seized upon the forward end, and commenced drawing the whole line through with ever increasing momentum. As it straightened out, the last log drew in upon the regular permanent side boom upon which four men were standing. Suddenly a stray branch of dead wood caught between the toggle chains, twisted out of water and descended about knee high at lightening speed upon the men. Not a second was given for reflection; it meant death to be thrown into the whirling maelstrom that sucked through the gates. The first man saw the danger, gave a cry of warning, turned and hurdled the flying stick and came down cat-like in his place. Instinctively each of the others in succession did the same, no one losing his balance, but coming down right side up and unhurt. The next section sluiced, you may be sure, was extremely straight before it started.

Booming Out at a Dam

WINDING IN THE HEADWORKS

Our race up the lake to catch the escaping logs had been nearly completed and the Captain, to herald our coming, had wakened the slumbrous hills with a hoarse whistle, when the rising mists disclosed a sight that brought every man to the upper deck, to strain his eyes across the waters. The blue surface was now ruffling with the rising breeze, and indistinct upon the horizon line could be seen dim specks of black rising and falling in clusters that seemed to concentrate around one point. Our rescue was too late, for the swollen

WINDING IN A BOOM BY HAND

Turning Out Logs

boom pressed by the rising wind had parted the great cables link from link, and what we saw were the exultant logs, now running upon the flood spreading out fan shape in their new-found freedom.

It was a desperate emergency, and one chance alone remained, to pocket the oncoming mass in our surrounding boom, behind the nearest point of land. The Captain ran to his wheel, and with reversing engines made for the shore. The wind had grown until now, dancing white over the blue waves, the foam flew from crest to crest of long rolling billows and gathered in irregular streaks across the tumultous water, and the oncoming logs leaped as if they were alive, and raced with the wind and their fellows down upon our slender barrier. We were not a moment too soon. With a celerity that eclipsed all their other efforts, the crew made a shore hitch of one end of our surrounding boom, around a few big trees, and the Captain threw both anchors. Strained and tense all hands gathered on deck to await the outcome, and speculate in doubtful tones the chances of our anchors holding; while in the boiler-room the stoker busily labored to feed the ravenous furnaces, and the fat cook, indifferent to all the fortunes of war, methodically set his tables in the galley ahead for the noonday meal, for the hours had flown by unnoticed in the excitement, and the sun had risen high with the wind. The hemp hawser creaked and groaned over our stern post, and from time to time the Captain sighted across the pilot house to note any drag of the anchors. On shore the waving tops of two mighty trees showed where the strain bore heaviest, and the whole field before us churned restlessly in undulating waves.

As the irresponsible will of the elements were here opposed by the modern force of appliance and invention, a short account of the adaptation of modern methods to overcome ancient impossibilities may be of interest to the reader. For many years the older methods of winding in against an anchor by hand, on what was called headworks, had deterred all attempts to exploit the vast bodies of timber lying beyond these lakes, for time and again a heavy loss had followed upon almost inevitable disaster. The old method had been to construct a large raft called a headworks, equipped with

STARTING A BOOM OF LOGS THROUGH A DAM

a drum, spindle, rope and anchor; tow this to the length of the rope by bateau, drop the anchor and wind in the boom logs by hand. At the point where the anchor rope stretched across knee high, it was said the men, thoroughly exhausted by many hours of labor, and fast asleep between their rounds, with their breasts leaning on the reaches, would regularly step over the rope when they came around to it in unison with the rest. But when creeping from headland to headland a strong wind caught the raft away from the shore, the anchor would drag like a plow in the deep soft bottom, or the rope would part, and then back down the lake they would go and lose all the labor of the day and night. The adaptation of the tow boat, however, made successful the older methods by adding speed and power, and brought out a whole new field of experience and adventure. The lore of the pioneer of the old order of things was still most valuable. Their knowledge of conditions had been gained by a preparedness to take advantage of nature in her every mood, and to note with care the sweep of the wind from each valley, and the protection furnished by each promontory or bay. The potents of the morning and the fulfillments of the day were their capital and long inheritance, and such lore was now reenforced by the careful weighing of figures and the scientific comparison of hulls, engines and textile strength.

Dinner had just been called by the cook in his usual drawling voice, and all hands had flocked to his long table to forget the excitement of the moment in the relish of beans and a huge bowl of custard, when a mighty lurch threw us all into a heterogeneous composite of legs, plates, fat cook and dessert. The scramble that ensued was full of flying arms and profanity, but having finally extricated ourselves and climbed to the deck, the cause of the commotion was seen. Two enormous spruce were bending slowly out over the water near the shore in response to the overpowering strain of the 2-inch hawsers which were slipping up their trunks in violent tugs, that snapped branches like pipe stems and drew tough roots from their long resting places. With a mighty lift and a last splash the far end of the boom swung clear carrying

Logs Going Through a Dam

one of the trees with it down the shore.

"Up with the anchors and cut loose the line," shouted the Captain, now thoroughly aroused, and an ax glinted over the stern post and the hawser whipped the water like a bow string. By good luck another promontory jutted out below, the last point of contact between ourselves and the lake, and all hope now lay in our reserve sticks recovered from the mouth of the river. The anchors came up dripping black ooze, and we made for the point below. Here a diagonal line could be run outward from a jutting point, and wedge the impact of the logs against the shore itself. Not a moment's delay or the boom would be upon us, and the Captain's orders were as vigorous as they were picturesque. Again, at the call of the boatswain, the men sprang to the oars and drove the bateau full up the shore in their eagerness and ran the lines into the woods. Anxious moments passed until the Captain saw with relief the boatswain wave his hands on the shore, and turning the wheel he rang the fast bell ahead and steered at full speed toward the oncoming mass, and swung the boat around the outer edge. Guided by the boom the moving field wedged closer and closer in on the shore, and our last try and hope hung in the balance. Slowly the logs settled in like a great ice pack, but the pressure this time was against the shore, and

as the hours passed and the wind slowly died down, we saw with growing relief our rescue had been successful although the mighty force of the oncoming logs was shown by the fringe of sticks driven high and dry upon the beach.

All the long afternoon we hung and held, and all the afternoon one by one the scattered logs drifted or were gathered in by our small convoy, until under the storm clouds the great red sun shone forth, and the warring elements in nature grew still at his completed course. Peacefully and warmly shone the last fire of the crimson West in spots of gold upon the mirrored surface between the logs, and at last the great boat let the hawser drop in the black water and made a final circle around the logs with the boom; lanterns flitted along the shore like will-o'-the-wisps as the crew made fast, and as the last knot was tied, and the last man clambered on deck; bitterns croaked, the lone owl hooted, and the faint far away cry of the loon came over the lake. The laugh of the tired crew had a genuine ring of satisfaction in it as they assembled before the warm furnace to talk it all over and turn in, and another unrecorded incident that goes to make the character of the passing American woodsman was closed, as the stoker went back to the grateful heat of his corner in the boiler room, and the Captain muttering slowly dragged himself aloft into the cold pilot house.

GEORGIA STATE FOREST SCHOOL

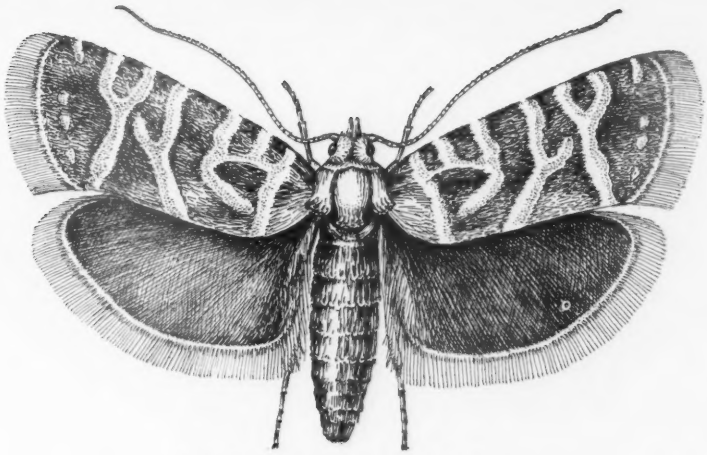
THE Georgia State College of Agriculture, through its Forest School, offers a four year course in professional forestry leading to the degree of Bachelor of Science in Forestry. Forestry is introduced during the Freshman year and practical field work follows both the Freshman and Sophomore years. During the Junior and Senior years provision is made for specialization along one of half a dozen different lines of forest activity. To the man desiring city work there is offered a combination of forestry and landscape gardening, providing the preparation necessary to fill the position of city forester. In the same way provision is made for specialization in Logging Engineering, Business Administration, Dendropathology, Forest Management, State Forestry and Forest Research.

The Summer Camp of the Forest School is conducted as an additional term of the Freshman and Sophomore years of the forestry course. The work is of a practical nature so that the students may secure the more perfect correlation of class-room theory and the actual operations in the woods.

For the first time, it has been decided to extend the privileges of Summer Camp to persons other than those matriculated in the University. It is the object of the School to reach and benefit in this way three other classes of nature students; first, those men who contemplate a course in forestry but prefer a summer of "woods" work in order to satisfy themselves that their decision is right; second, those teachers, and prospective teachers, of "nature study" who desire further preparation; and third, that great group of men and women who love nature and desire to learn more of her.

The State Forest School is in charge of Prof. J. B. Berry.

The forestry movement in the South has been rather slow but the fact that prominent men and women of the State are losing no opportunity to voice forestry sentiments in public is a good indication that thinking people are awaking to the dangers of deforestation. Needless to say the movement, once started, will sweep the state in the same way in which it has taken many Northern States. In fact, a movement is on foot to introduce a forestry bill at the coming session of the legislature and it is to be expected that provision will be made for machinery to enforce forest legislation.



THE PINE-SHOOT MOTH—GREATLY ENLARGED

THE PINE-SHOOT MOTH

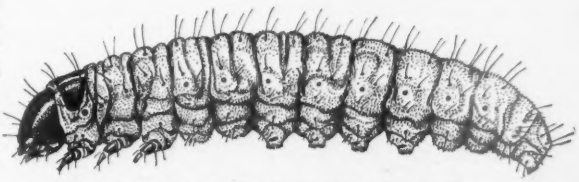
THE importation of pine trees from Europe after July 1, 1915, has been forbidden by the Department of Agriculture under a quarantine order. This action was taken to protect American pine trees from the pine-shoot moth which has done so much injury in Europe and which has been found in a few places in this country.

This pine-shoot moth is a small orange-red moth, the larvæ of which eats out the new buds and kills or deforms the young twigs of pine trees, so as seriously and permanently to lower their timber value. It has within very recent years been accidently introduced into America on imported European pine seedlings and has unfortunately become established in several widely separated localities in the eastern and middle western States.

Early last summer, a correspondent of the Bureau of Entomology complained of a serious insect injury to European pines under his surveillance on Long Island, and sent examples of the injury and of the larvæ causing it; the latter could not be identified as those of any of our known American pine pests, and August Busck, Entomological Assistant in Forest Insect Investigation of the Bureau of Entomology, was authorized to visit the affected localities to ascertain the extent of the injury and obtain sufficient live material for study and rearing. From this material a large number of moths emerged and these were at once recognized as the famous European pine-shoot moth.

Subsequent surveys, says Mr. Busck in his report, established the fact that the species has been repeatedly introduced on European nursery stock, and that it has become established in nurseries and parks in several localities scattered over nine States.

In view of the experience with other introduced European insects, and con-



LARVA OF THE PINE-SHOOT MOTH—ENLARGED

sidering the very serious financial loss caused abroad annually by this insect, its introduction into this country gives just cause for alarm, because incalculable injury may result to the vast American forest interests if this insect is permitted to become generally established on native pines.

The species is a constant menace to pine forests in Europe and annually causes serious depredations, especially to young plantations of pine, in spite of continual preventive work against it. It has been the subject of much study and of an extensive literature from the time it was first described by Schiffermiller in 1776 to the present day. The species was named in honor of a Vienna entomologist, Baron Buol, who studied its injurious work during the latter part of the eighteenth century; since then numerous accounts have appeared of particularly severe outbreaks in many parts of Europe, from England to Russia, and from Scandinavia to southern France. It also occurs in Siberia.

The moth is confined to pine and does not attack other coniferous trees, as spruce or larch, even though these grow alongside of the infested pines. While the species is most often mentioned on the yellow pine, or Scotch pine in Europe, because this is preeminently the forest tree of importance there, it attacks all species indiscriminately, according to Ratzeburg and other authorities, and the American infestations have come in on European seedlings of the Austrian pine and on mughus pine quite as often as on Scotch pine.

According to Ratzeburg and Severin, it also attacks, and is equally injurious to, American white pine, which is cultivated in Europe; and Mr. Carl Heinrich found the species on a small lot of another native American pine, which was growing immediately surrounded by infested European pine seedlings.

These latter records are particularly significant, as they prove beyond question that the pest will spread to our native American pines if not prevented.

The species attacks mainly young trees between 6 and 15 years of age, but it is often excessively destructive to younger plantings and seedlings and injurious also to older trees, though trees of 30 years or older are rarely seriously affected.

The larvæ of the European pine-moth is so effectively protected within the

WORK OF EUROPEAN PINE-SHOOT MOTH
SHOWING THE MALFORMATIONS IN PINE RESULTING FROM INJURY BY THIS PEST

BRANCH INFECTED BY PINE-SHOOT MOTH

buds that it can not be reached by any insecticide, and the only method of combating it is that used in Europe for more than a hundred years, namely, the pruning and destruction of the infested buds and twigs together with the larvæ they contain. Such hand picking is practiced every year in the government-controlled forest reserves of Europe.

This pruning must be done while the insect is within the twigs, and while it may be done throughout the entire year, except during the midsummer months when the insect is in the adult stage, it can be most profitably done in the fall and winter months while the young larvæ are yet within the undeveloped buds, because the pruning at this time will enable the secondary set of buds to develop in the spring without delay. The only drawback to the collecting of the larvæ in the fall and winter is that the infested buds are then less noticeable than in the spring when the injury is further developed. A little practice, however, soon enables instant recognition of the infested buds, even by an unskilled laborer; the slight exudation of pitch at the base of the bud covering the entrance hole of the larvæ is very characteristic and easily recognized when once known.

In the spring, when the buds develop into young shoots, the injury is very much more apparent, and anybody can then distinguish the infested twigs at a glance. For this reason it is advisable to have the trees gone over again in the spring, so as to remove any infestation which has been overlooked in the fall. In America the work of the larvæ in the fall has progressed far more and is much more easily discovered than is the case in Europe, where the larvæ have attained very small proportions and have attacked only one or two buds before the winter resting period intervenes.

The fact that this species is stationary during the greater part of the year, and

TWISTED GROWTH INDICATING PRESENCE OF PINE-SHOOT MOTH

only found within definite parts of certain kinds of trees, namely, in the next year's buds of pines, makes effective control work much easier than is the case with insect pests which are general feeders and which are not confined to definite parts of the food plant, as, for example, the gipsy moth or the brown-tail moth. While the European pine-shoot moth is confined to nurseries and private parks and has not spread to the native pines, it should prove a comparatively easy task to eradicate the species absolutely within any limited area. At the present time it would even seem possible completely to stamp out this dangerous pest in America, and forestall the infestation of our native pine forests, provided that the danger of new infestation is removed. But when once the species has multiplied sufficiently to become generally distributed on the native pines the possibility of eradication will be past.

WOMEN'S WORK IN CONSERVATION

By MRS. JOHN DICKINSON SHERMAN

Chairman Conservation Department, General Federation of Women's Clubs

THROUGH the Conservation Department the General Federation has had a share in the work of acquiring the new Rocky Mountain National Park for the American people. This new park is seventy-five miles northwest of Denver, in the Estes Park region. It contains approximately 350 square miles of the most picturesque part of the Colorado continental divide.

Mr. Robert B. Marshall, chief geog-

Copyright by Moffett, Chicago MRS. JOHN DICKINSON SHERMAN

rapher of the United States Geological Survey, said in his report to the Department of the Interior:

"This region as a whole is as beautiful as any to be found in the United States or, indeed, in the whole world."

The Rocky Mountain National Park abounds in natural scenic attractions and in the things of interest in the outdoor world. There are forty mountain peaks rising over 12,000 feet above the level of the sea and ten peaks of over 13,000 feet, while Longs Peak, "King of the Rockies," towers above them all to the height of 14,255 feet. There are glaciers and snow fields, hundreds of mountain streams, waterfalls and cascades, 150 mountain lakes, forests, mountain meadows, canyons and gorges. One thousand five hundred varieties of wild flowers are to be found in this area and over 100 species of birds. There are many kinds of wild life, including mountain sheep, grizzly and black bears, elk, deer and beaver. Nowhere in the world today is there so great a mountain sheep range; nowhere are there more interesting colonies of beaver.

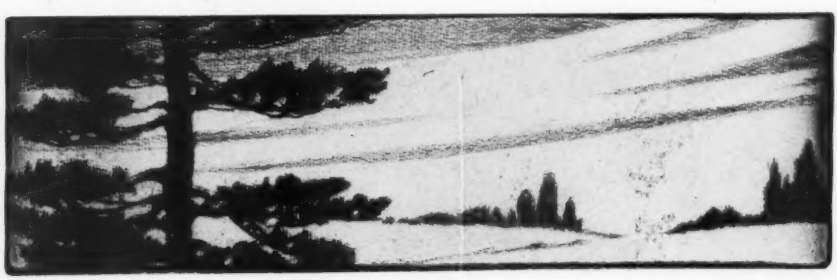
The new park, therefore, appeals to the tourist who is desirous of seeing scenery and is limited in time. It has even a stronger attraction for those who desire a longer stay and a more intimate acquaintance with its natural beauties. The climate is mild, the air invigorating and in summer there is no snow to make even the highest peaks inaccessible.

It seems especially fitting that this splendid scenic area should have been created a national park. Practically all of the land within its boundaries was already a part of the public domain—the Arapahoe and Colorado National Forests. This land has little commercial value, but is fitted by nature to the needs of the people for a public recreation ground and as such will serve its highest purpose. Many of the attractions of the park are of a perishable nature and need the protection of a national park management. As a national park this area becomes sanctuary for wild animal life, of which enough is left to insure its perpetuation and increase under protection. Under national park management an adequate system of trails and roads will be built, thus affording easy access to the natural scenic beauties.

The accessibility of this new national park is one of its strongest merits. It is within easy reach of the people of the great Mississippi Valley and much nearer the center of population than any other scenic national park.

This region is already comparatively well known. For several years people have been visiting it from every part of the United States. Last summer alone there were more than 55,000 visitors and most of these were from outside the State of Colorado.

It was because of the nation-wide interest in this region and the especial fitness of the area for park purposes that the Conservation Department of the General Federation gave the measure its earnest support and we are highly gratified with our first work for the conservation of natural scenery.



IS THIS THE LARGEST ELM?

MRS. Mary M. Williamson of Middletown, Conn., furnishes an addition to the several magnificent elms for which Connecticut is famous, in the Wethersfield Elm which she believes is the largest in the State.

This elm is at Wethersfield, Hartford County, Connecticut, and when it was measured in 1912 by Mrs. Williamson's husband its circumference was 27 feet 1 inch, its spread 142 feet 8½ inches and its age about 175 years. This is larger than either the Benedict Elm mentioned in AMERICAN FORESTRY for February or the Stirling Elm described in AMERICAN FORESTRY for April. Indeed it is so much larger than either of these two that there apparently is justice in the claim that it is the largest elm in the entire State.

THE WETHERSFIELD, CONNECTICUT, ELM

IT IS CLAIMED THAT THIS IS THE LARGEST ELM IN CONNECTICUT AND THE DIMENSIONS EXCEED THOSE OF ANY OTHER SO FAR REPORTED TO AMERICAN FORESTRY

DEVELOPING BRITISH COLUMBIA

HON. W. R. Ross, Minister of Lands for British Columbia, who during the past three years has organized a business administration and protection of the forests of that Province, is now undertaking the systematic development of wider markets for British Columbia forest products. The importance of this work to the Province cannot be over estimated. The annual value of the forest products of British Columbia in 1913 was nearly $34,000,000. The forests of the Province are so extensive as to support in perpetuity five times as great an industry, or one worth $170,000,000. The markets of British Columbia lumber and other forests products must be found outside British Columbia. Mr. Ross has, therefore, been active in securing the appointment of the Chief Forester of the Province as a special Commissioner of the Dominion Government to investigate the possibility of shipping Canadian lumber to all the important foreign lumber markets of the world. He will visit in particular the United Kingdom, France, Italy, South Africa, Australia, New Zealand, India, China and Japan. The information gained from this investigation will form the basis of the steps to be taken by Mr. Ross in making it easier for British Columbia manufacturers to export to foreign markets. The Minister has also under consideration plans for cooperating with the timber industries of the Province in creating a greater demand for provincial lumber products in the Canadian Prairie and Eastern Canada. The problem of increasing the British Columbia export trade in forest products is one which means millions of dollars to the people of the Province, and for this reason it is receiving careful consideration at the hands of the Government.

HON. W. R. ROSS
MINISTER OF LANDS FOR BRITISH COLUMBIA

American Matchwood for Brazil

American manufacturers of matchwood may find a market for their product in Brazil, if a sample shipment now being arranged by the U. S. Forest Service proves suitable to the Brazilian match manufacturers whose ordinary supply of Russian aspen has been cut off by the European war.

HON. CURTIS GUILD DEAD

MEMBERS of the American Forestry Association mourn the loss of Hon. Curtis Guild, of Boston, who was elected president of the Association on January 13, 1909 and served until August 2, 1911. Since then he was a director and a vice-president of the Association. Mr. Guild died at his home in Boston on April 6, of pneumonia, after a few days illness.

HON. CURTIS GUILD, VICE PRESIDENT AMERICAN FORESTRY ASSOCIATION, WHO DIED AT BOSTON ON APRIL 6, 1915

The following telegram of condolence to Mrs. Guild expresses the sentiment of the members of this Association:

"I beg to express on behalf of the American Forestry Association, and of the many friends of forestry of Mr. Guild, deep regret at the termination of a life so distinguished for public service to his country and to its best interests. His services in the cause of American Forestry will ever be remembered with appreciation and gratitude by the friends of conservation in America.

H. S. DRINKER,
President, American Forestry Association."

Mr. Guild became a member of the American Forestry Association on November 18, 1908, and remained a member until his death. He did much to further forest conservation in this country and was a most valued official of the Association. The following from AMERICAN FORESTRY of September, 1911, was a tribute paid him when he resigned as president to become ambassador to Russia:

"The appointment as ambassador to Russia of the Hon. Curtis Guild deprived the American Forestry Association of a president of distinguished public service, who brought to this office enthusiasm and a strong belief in the cause which had developed by official contact during six years of service as Lieutenant Governor and Governor of Massachusetts while that State was shaping a constructive forest policy."

Mr. Guild, three times elected Governor of Massachusetts and Ambassador to Russia in the Taft Administration, was born in Boston on February 2, 1860. He was the son of Curtis and Sarah Crocker Cobb Guild. His father was the founder of the Boston *Commercial Bulletin*.

He graduated from Harvard with highest honors in 1881.

In 1884, after traveling in Europe, he was admitted to full partnership with his father and uncle in the ownership of the *Bulletin*. In 1902 he took sole charge of the paper. His political career began at the age of 21. In 1895 he was elected chairman of the Republican State convention. He was prominent as a speaker for McKinley in 1896

"I believe we all may take an honest pride in the object of our Association. The passing of the Appalachian Mountain Bill marks a new epoch in the preservation of the forests and especially in the preservation of forests on the watersheds upon which depends absolutely the existence, not to say the prosperity, of any people.

The wide tracts of wind-swept, rocky, sterile districts in Spain are an object lesson that cannot be too strongly brought home to every American citizen.

Without smoothly flowing rivers there is no permanency of fertility or even soil for agriculture. Without forests to restrain the Spring freshets and to conserve the slowly melting snows on the mountain slopes there can be no smoothly flowing rivers and without conservation there will surely be no forests.

It is all very well to restore by irrigation, though at terrific expense, as in Russia and our own alkali districts, naturally fertile soil. But if the soil is swept away there is no fertility to be restored.

Forest conservation is more backward in the United States than anywhere else in the world. It should be encouraged in every possible way for the sake of beauty, for the sake of shade as a barrier against the blizzard and the cyclone, as a promoter of fertility and through such promotion a promoter of a lower cost of living.

The Biblical story of the tree as a source of human knowledge and civilization, the Norsk legend that the whole earth rested on a tree, the prehistoric worship of the tree in places as far apart as Hindustan, Germany and England is a natural instinct and the surviving custom of celebrating victories by a green bough in the helmet are all evidences of the human instinct to look to the tree as a natural protector and promoter of human happiness.

Faithfully yours,

Curtis Guild

A few days before his last illness Mr. Guild sent the above expression of opinion on forest conservation to AMERICAN FORESTRY.

and 1900, and in 1902 he was elected Lieutenant-Governor of Massachusetts. After serving as Lieutenant-Governor until 1905 he was elected Governor,an honor which fell to him twice subsequently. April, 1911, he was appointed to represent this country at the Russian capital. Col. Guild enlisted during the Spanish-American war as First Lieutenant and Adjutant of the Sixth Massachusetts, and was made Lieutenant-Colonel and Inspector-General.

MAKING PRIVATE FORESTRY PAY

By JAMES UPHAM

THERE is in Michigan a practical and successful lumberman of many years' experience. He believes in forestry. About thirty-five years ago he acquired about 1,400 acres of young growth maple, hemlock, oak, birch and cherry. At that time he was connected with a steamboat company using cordwood as fuel. He saw a time when local forests would be exhausted. He realized the future value of his tract and figured the time would come when its lumber would be such that it would pay to handle it by forestry methods and manufacture practically every particle of it that could be taken off. He resolved upon systematic forest management. Roads were built through the tract; its growth was studied; its manufacture considered—the birch going to the spool industry, the cherry and oak for veneers and other stuff for novelties so that everything was used down to the last piece. Today many of the trees are over 12 inches in diameter, breast high.

The management of the tract as planned by David Day is interesting. He began it as a business proposition. So we learn that his plan was to make it pay from the investors point of view. Mr. Day wants to keep this 1,400-acre tract right along, not despoiling its beauty by clean cutting. To do this he will have to divide the 1,400 acres into 25-acre blocks—numbering from one to fifty-six blocks. Each year one of these blocks is cut out. The next year another; and so on until all fifty-six blocks have once been cut over. Then number "one" block will be ready to cut again. Thus the forest is never cut with the "clean-sweep" policy.

Contiguous to the tract is a small sawmill. Mr. Day will saw his logs into lumber, spool blocks, veneers and novelty stock. Herein lie his annual dividends on the forestry investment. He cuts, removes, and utilizes *every possible portion of a tree* and protects young growth with a view to future returns from it.

Since Mr. Day is a lumberman of long experience, the question of a proper disposal of his forest products is readily answered by himself. The following are prices received by Mr. Day, f. o. b., Glen Haven, Michigan. The prices are for log run, that is, the full run of the log except No. 3 common.

Sugar maple, $23 to $24 per M.
Beech, $18 per M.
Soft elm, $29 per M.
Basswood, $27 per M.
Rock elm, $26 per M.
Hemlock, $15 to $16 per M.
Hemlock (mill cull), $9 to $10 per M.
Sugar maple and beech slabs and edgings $3.50 per cord.

The prices of oak and cherry are not given since they sell at very high prices anyway and this article shows only what forestry is doing for less valuable species. The lumber prices alone are given. In addition veneers and novelty stock will swell his profits.

This tract is attracting a great deal of attention both from the United States Government and the State and shows what anyone can do with at least 1,000 acres or upward when conservatively handled under forestry.

It is especially noteworthy because it is being handled by a practical business man who would not touch forestry if there was no profit in it for him.

A SLEDDING LOG HAULER

A CORRESPONDENT, impressed with the work of a steam log hauler at the Boyd & Harvey logging camp at Dead River Forks in the northern part of Maine, sends the following sketchy account of the work it does when conditions are right, which means snow from 6 inches to 3 feet deep.

The hauler pulls eight sled-loads of logs, each load including 10,000 feet of spruce logs, 80,000 feet in all.

The sleds weigh a half-ton each. The load on each sled weighs 5 tons. That's five and one-half tons to a sled, or a total of 45 tons that the hauler drags along.

This log-hauler at the Boyd & Harvey logging camp will travel through 3 feet of snow. It has to have snow, in fact, in order to do business, for its front wheels are not wheels at all, but big skids or runners.

The back wheels are as big as road roller wheels and are "slagged," with big steel shoes.

If the log-hauler is on a down grade they check it from running away by spreading hay in front of the skids. It wouldn't do to have the hauler take the bit in its teeth, so to speak, and gallop off with 80,000 feet of spruce. Something might "bust."

It takes four men to run this log-hauler, steersman, engineer, fireman and conductor. When the tall spruce trees, which furnish pulp for making news paper, are felled on the broad forest slopes, they are drawn by horses to the hauler, where they are loaded on sleds. After eight sleds have been loaded in line the hauler buckles on, gives a couple of puffs and away goes the whole outfit over to Dead River 5 miles from the Boyd & Harvey camp.

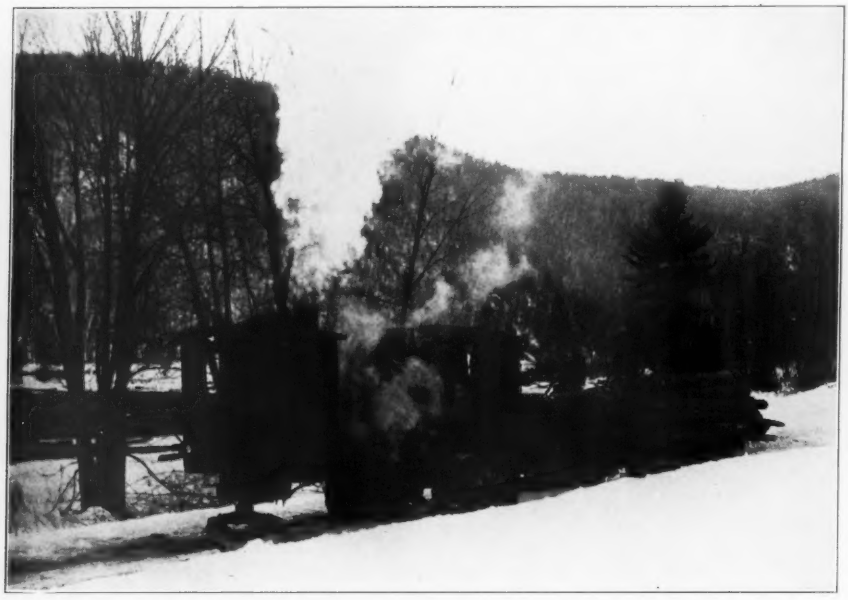


Photo by International News Service

THE SLEDDING LOG HAULER

IN ACTION AT THE LUMBER CAMP AT DEAD RIVER FORKS, MAINE. THE MACHINE HAULS FROM FOUR TO EIGHT SLEDS AT A SPEED OF SIX TO TEN MILES AN HOUR—EACH SLED WEIGHS ABOUT FIVE AND ONE-HALF TONS LOADED

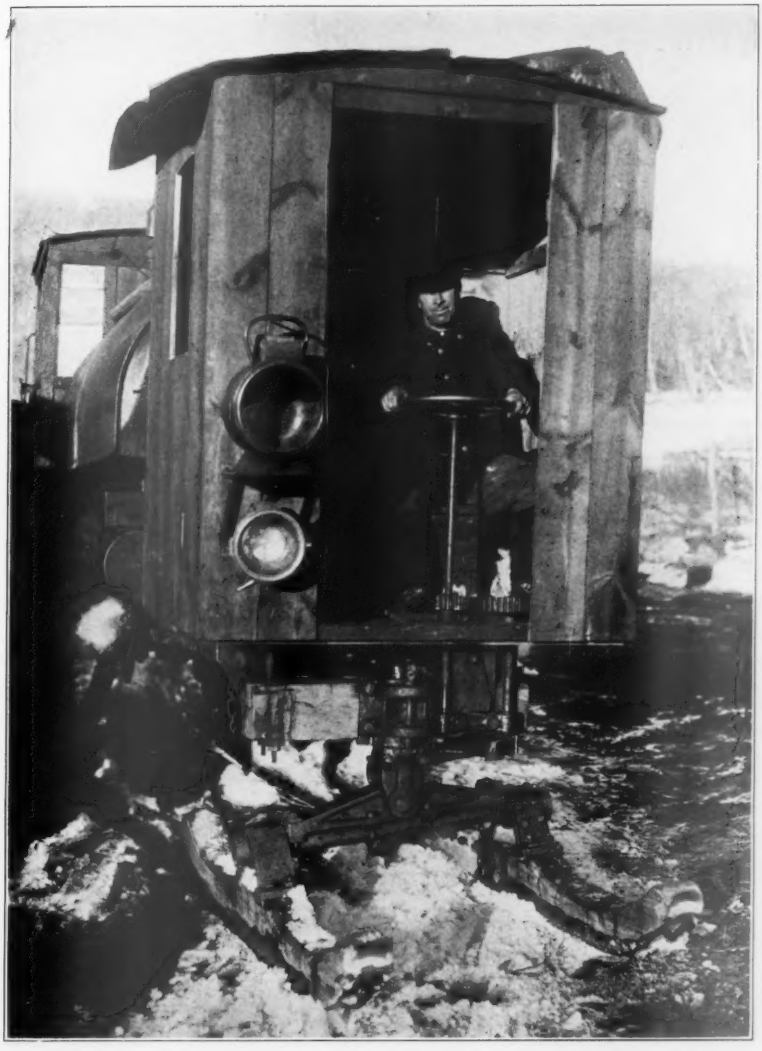


Photo by International News Service

THE LOG HAULER HEAD ON

THE ENGINE HAS A CREW OF FOUR MEN AND WILL RUN ON SNOW FROM SIX INCHES TO THIRTY-SIX INCHES DEEP

The cutting is done for this season and the hauling is practically completed because the snow is going. The lumberjacks are ready to get back to town, after their hard work in the woods.

This place is far enough out of the way. It is 40 miles from Moosehead Lake and 8 miles from Lake Moxie station on the old Somerset branch of the Maine Central Railroad.

There have been forty lumberjacks at this camp, all under Boss Farley, with Mrs. Farley in charge of the cooking.

CAMP COLORADO IN THE MANITOU FOREST

COLORADO SCHOOL OF FORESTRY

THE Colorado School of Forestry was established as a department of Colorado College in 1905, when General W. J. Palmer and Dr. W. A. Bell gave to the College a tract of 9,500 acres known as Manitou Park, situated in a mountain valley about 25 miles Northwest of Colorado Springs. About 3,200 acres is agricultural land and has been devoted to that purpose, the proceeds being applied toward the endowment of the School. The remainder, now called the Manitou Forest, is timbered and is used for field instruction. The Manitou Forest itself is surrounded on three sides by the Pike National Forest, to which the students have access for the purpose of estimating timber and studying the various problems of forest management.

In addition to these natural advantages, the location of the School at Colorado Springs affords to the student the opportunity of studying other important branches of forestry that are being developed by the Forest Service. Eight miles west of the city, on the slopes of Pikes Peak, is situated the Fremont Experiment Station, where extensive forest investigations are being conducted. The practical purpose underlying these investigations is to find out how best to reproduce, develop and manage the forests of the Rocky Mountain region. A few miles north is the Monument Nursery, where a million seedlings are grown each year to be set out on the denuded lands in the National Forests.

The United States Bureau of Entomology has recently established at Colorado Springs a forest insect station for the study of the insect problem in the Southern Rocky Mountains. An insectary will be maintained in connection with it for the breeding of the insect-enemies of the tree-killing species. The location of this station at Colorado Springs will be of great advantage to the forestry students in their study of forest entomology.

The forestry curriculum was thoroughly revised in 1912 and a larger amount of practical field work introduced. All the forestry courses proper were con-

STUDENTS EXTRACTING SEED
A PART OF THE WORK DONE BY THE STUDENTS AT THE COLORADO STATE SCHOOL OF FORESTRY

solidated into the junior and senior years, an arrangement which affords a stronger and more systematic presentation of the whole subject than was possible in the former curriculum in which the forestry subjects were intermingled with others throughout the four-year period. This arrangement also enables the Department of Forestry to make full use of its most valuable asset—the Manitou Forest. A forest laboratory is the prime requisite of a school of forestry. When the Manitou Forest was given to Colorado College for this purpose Mr. Gifford Pinchot, then Chief Forester of the United States, made the statement that the Colorado School of Forestry "has in Manitou Park the best out-of-door laboratory for forest experimentation in the country." But under the old program it was impossible to make adequate use of this magnificient tract of woodland. This has now been provided for by dividing both the junior and senior years into three terms—fall, winter, and spring—and giving the entire work of the fall term and part of the spring term (in the junior year) in the Manitou Forest.

In the junior year the student enters the Forestry Department. During the fall term, from early in September to the last of November, the headquarters of the School are at Camp Colorado in the Manitou Forest. The camp consists of a group of buildings and tents that provide ample and comfortable accommodations. Instruction is given by daily lectures, recitations and field work. The juniors spend the first half of the term studying forest mensuration. Sawmills in the vicinity provide the opportunity for practice in log-scaling and the making of mill tallies. Measurements are taken of felled and standing trees and the data worked up into volume, growth and yield tables.

The last half of the term is spent in forest surveying and timber estimating. After receiving a thorough drill on a number of sample "forties" the class goes on camping trips to different parts of the Pike National Forest, estimating and mapping large bodies of timber. An experienced mountaineer accompanies the party as cook and teaches each student the arts of camp cooking and packing.

The juniors also begin the study of dendrology in the fall term. By study in the field they become familiar with the different species and forest types of the region. They are also given suffi-

cient practice in timber operations—tree-felling, log-making, skidding, etc.—to make them proficient in the use of woodsmen's tools.

The senior class during the fall term study forest management and forest improvement work, or construction engineering. The field work in forest management involves the making of working plans for the Manitou Forest or adjacent tracts.

The course in Forest Improvement Work furnishes instruction in the building of forest roads, trails, bridges, fire-lines, telephone lines, lookout stations and ranger cabins. It is imperative that a forester acquire a thorough knowledge of these operations in order that he can lay out, estimate the cost of, and supervise such work. A large amount of construction engineering is always necessary on forests that are being put under scientific management and today forms one of the chief lines of work on our National Forests.

A few days of the fall term are spent in collecting the annual seed crop. At the proper time, just before the cones of the yellow pine and Douglas fir are ready to open, they are collected and spread out on canvas sheets to be opened by the sun. They are then thrashed out, cleaned and stored away to be used in the planting operations the following spring.

The winter term, from the first of December to April, is spent in Colorado Springs, when library, laboratory and wood testing work is carried on in connection with the lectures and recitations in the various technical courses. The wood testing laboratory is well equipped for that purpose. Here is mounted a Riehle testing machine for making tension, compression, shearing and transverse tests. Students are required to make a series of tests upon the resisting properties of various species of commercial woods.

In the spring the work is again transferred to the field but the two classes separate. The juniors spend part of the term in the Manitou Forest and part at the Government Nursery at Monument. They return to the Forest for the field work in silviculture.

The seniors visit some large lumbering center in the South, where they study logging and milling operations on a large scale. They also estimate an extensive tract of timber and make a logging plan for it. The spring of 1913 was spent at Crossett, Arkansas, where the facilities for such work are unexcelled.

In addition to the prescribed course as here outlined, the students are expected to gain further experience by spending their summer vacations in some kind of practical forest work—either working for a lumber company or in the Forest Service. Most of them obtain employment on the National Forests.

A CLERK'S WORK ON A NATIONAL FOREST

By JULIA T. SHINN, *Clerk on the Sierra National Forest*

"WHO cares about it? Anybody but another clerk?" Which only goes to prove that you've never been a clerk in the field. There a clerk is a clerk and any number of other things—not a Pooh-Bah, for her duties are humble enough, but a sort of "crew of the Nancy Brig."

Many a Forest office is at the end of a stage line where there is a small whirl of a center—hotel, store, blacksmith shop and saloon (or if the place be "dry," a pool-hall) and possibly a chapel—to which the roads converge from the canyons and the passes. The clerk lives, perhaps, at the hotel; in summer the rendezvous of teamsters stockmen, millmen, "traveling men" and passing tourists intent on higher regions, but in winter without guests save herself and the school-mistress. Or perhaps she lives in her own home on a hill farm within a mile of the Forest office.

In either case she is part of the little hill community; and just as the Deputy Supervisor runs the cinematograph for the Improvement League picture shows, so she and that Deputy's wife help with the refreshments served thereafter, and count the door money taken in by one of the forest rangers. She plays the baby organ for the Sunday School in the little chapel which the aforesaid door money is to paint—and the Forest Supervisor is president of the organized congregation; the Forest Examiner teaches the Bible class.

When, therefore, on a morning, the Supervisor is dictating letters and the telephone bell rings, the clerk turns to

A FOREST SUPERVISOR'S OFFICE

THE UP TO DATE EQUIPMENT IS APPARENT AND THE OFFICE LOOKS AS IF IT IS USED FOR IMPORTANT AND PRACTICAL WORK, AS IT IS

the switch board only to hear: "Do I bring sandwiches or cream puffs?"

"Puffs," she answers, feeling her ears get hot as she senses the impatience of the Supervisor.

"Have you got a good recipe?"

"I'll call you up at noon."

Later, the dictation finished, she begins her typewriting. Again the telephone. This time it is: "Is there a doctor book in your Forest Library? Can you find out what's good for croup? I'm afraid Betty is going to have it, and I'm all alone here, you know; Jack's gone to the Chowchilla fire."

She works fast to make up for time lost looking up croup remedies, but before the letters are ready for the Supervisor, a district ranger calls in: "Can you tell me what was paid per foot last spring for those eaves troughs put up on the office?"

Fortunately she remembers the name of the firm from whom the troughs were bought and can run through the accounts for last year and dig out the desired information.

"That much? Gee! Too rich for a ranger's blood. Thanks just the same."

Back to the typewriter, when a knock comes at the office back door. The Supervisor can see that door from his windows, and calls out: "It's old Piutey; I haven't time to waste on him. Will you interview him?"

Old Piutey proves to have a basket to sell. "Four dolla you. Dat Susie woman she say 'Nother woman, fi' dolla. Jane, she my fren'—four dolla he." Down falls the clerk before such subtle flattery, and four of her hard-earned dollars are transferred to the corner of Piutey's red bandanna, though she has a sneaking feeling that a good business woman would not have given more than three dollars for the basket. "Never mind," she says to herself, poor old Sue needs the money and this will make a good wedding gift for the Massachusetts cousin, anyhow."

Once more she tackles the letters, and this time they are finished, though not till noon.

After noon come accounts; for a field clerk, like the clerk of the country store or the country school teacher, must be familiar with all phases of the work. Here is a voucher signed in the wrong space. A new one must be prepared and sent to the creditor of the Forest with more careful instructions. Here is a voucher amounting to over $50 and no bids. Will the men never learn to heed that restriction! She goes to the telephone to call up the offending ranger.

"Mr. Smith, is this your forage voucher for two tons of hay delivered at the Mount Bullion Station?"

"Yes, marm."

"It's for sixty dollars!"

"Yes, marm."

"But there are no bids."

"No, marm. You can't get bids on hay, Miss Brown; no two lots of hay are alike and that there's the only first-class hay in this neighborhood."

"You might have bought it a ton at a time—sent it in on two vouchers of different dates."

"No marm—you see I got it cheaper all on one load," replies honest Smith.

Rebuked, the clerk says faintly "All right—goodbye." Then she racks her brain for an "exigency statement" that will obviate the necessity of bids. Finally on the ground that "no two lots of hay are alike" she types in "Only dealer within a reasonable distance from whom the article could be obtained," and prays her guardian angel that the voucher may pass the scrutiny of the Fiscal Agent safely.

Having worked through the vouchers and prepared them for signature, she turns to a bunch of "special use" reports. A number of them have been approved by the Supervisor and the permits are easily made out, the letters of transmittal quickly prepared. But here is one in which Ranger Grayson recommends the granting of a five-acre residence permit.

"The old man has a sick girl," writes Grayson, "and they like to camp there. He thinks he needs five acres. It's a cold canyon, anyhow, and no one else would want it, so I recommend that the use be granted. He is a poor man and can't really afford the five dollars, so I hope you can put it lower."

Now Grayson knows, as well as the clerk does, that regulations are regula-

FILING CASES INDICATE AMOUNT OF DETAIL

THERE ARE SO MANY THINGS TO TAKE THE ATTENTION OF THE FOREST SUPERVISOR THAT BUSINESS EFFICIENCY IS NECESSARY

tions and that $5.00 is the minimum charge for a residence permit—three acres the maximum area. What is to do? Put it up to the Supervisor? What is a clerk for but to save the Supervisor such details and leave him time for more important things? Only those deplorable creatures "clerks that can't think" do such things. So she formulates a letter to Ranger Grayson for the Supervisor's signature, calling his attention to the proper page and line in the Manual, and suggesting that he see the man again and explain the regulations to him.

3.45—time to take the basket of letters, permits, vouchers, etc., to the Supervisor for signature. She takes it in to the private office, then returns to put her desk to rights, answer a few telephone calls, etc., until the mail shall be ready to put up.

A subdued chuckle comes from the Supervisor's office. Then he calls: "Miss Brown, there's no reason why this old man Andrews shouldn't *camp* anywhere he pleases, provided he uses tents and not a permanent building. As for the five acres in Cold Creek Canyon, I suppose he wants it for his horse and cow at his summer camp. He could have a $2.00 pasture permit for that. Needn't bother tonight, but fix him up in the morning."

She takes back the letter—without meeting the Supervisor's eye—and, properly chastened as to clerks who can't think, shuts up shop for the night—resolved to try the next day to think with her head more than with her Manual.

Next morning, the weather data recorded, she turns to the pile of mail on her table, opens and stamps it with the dater and takes it to the Supervisor, holding out such routine items as need no attention until she shall have done her part. These are accounts to be vouchered, vouchers to be audited and entered on the accounts cards, approved applications for forest homesteads to be recorded and sent to the proper ranger for report, reports on special use

applications to be checked up, requests for grazing application blanks or rangers' requisitions for supplies.

By the time she has laid out her day's work, it is time to take dictation, and the round begins again. Thus day follows day, each full of interesting details, each different from the last, and all worth while, because the clerk in a field office of the Forest Service feels herself to be a part of The Game, not just a cog in a machine.

THE FORESTRY ISSUE IN THE LAKE STATES

By H. H. CHAPMAN

NOWHERE in the Eastern States has there been greater interest displayed in forestry than in the States of Michigan, Wisconsin and Minnesota. The public consciousness has been keenly aware of the extensive denudations by lumbermen, transforming many forest areas into barren plains. Forest fires, sweeping over these level lands, have attained a speed and fierceness unknown in mountain regions, and on several occasions, notably at Hinckley, Minnesota, in 1894, and at Baudette, Minnesota, in 1910, have resulted in great loss of life as well as property.

The stimulus thus given to popular interest in fire protection and forestry would long ago have brought about an advanced state of development of public forest reserves, were it not for an insidious undertow constantly working to discredit the movement by misrepresentation and breaking out in open hostility at the least provocation. This opposition is directed against the use of lands for forest production. Its advocates include interests which deal in wild lands, and who on general principles oppose scientific land classification as tending to bring the agricultural possibilities of a region into disrepute. If the public accepts the statements of these land dealers they will be forced to believe that not an acre of non-agricultural land exists in the three Lake States, and that the moral right of land speculators to sell any land whatever to prospective settlers is unquestioned.

Such representations are eagerly accepted by townspeople and practically all classes who depend for their own prosperity upon the upbuilding of a region through development of farming and may even be echoed by farmers and settlers in their desire to secure increased population and a more extensive distribution of the tax burden. Hence the strength of this fundamental opposition to State Forest reserves need occasion no surprise.

But if our civilization in America is to progress, or even maintain itself, the unregulated exploitation of the weak by the strong, the ignorant by the unscrupulous, must cease. An economic fact cannot be suppressed by merely denying it. Results speak for themselves. One of the deepest truths demonstrated by centuries, in the most densely populated nations of the Old World, is that there exists much land too poor to be successfully farmed. The one profitable use for such land is forest production. The result of efforts to farm non-agricultural soils is impoverishment, discouragement and actual pauperization, leading finally to the creation of a race which is wholly incompetent. Fortunately, the extreme results, in the Lake States, have not had time to manifest themselves or are prevented by the mobility of the population. Instead of being prevented from seeking other fields, as so often happened in absence of transportation in earlier ages, the unfortunate victims of land hunger, after exhausting their resources, abandon the farm and the mortgage, and drift elsewhere, perhaps to the slums of some city. If of superior stock, they may even profit by their experience and get a start on

better land, becoming eventually prosperous citizens.

These facts, so abundantly proved by even the most superficial investigation of individual cases in any county containing non-agricultural soil, are a bitter pill to swallow for the average American optimist. Ostrich-like, he seeks to deny the existence of economic facts by concealing his head in the sand. Economists who seek to secure a proper determination of the real value of lands, by scientific means, for the double purpose of devoting lands of true agricultural value to farming and of withholding worthless lands from such uses, are subjected to storms of abuse and vituperation and branded as enemies of prosperity and progress; while legislative and private means are used to discredit and misrepresent their efforts.

This situation calls for a patient and persistent effort to educate the public mind to recognize the great truths underlying land classification. It is the most fundamental and important of all efforts at true conservation of human energy. Since forestry presents a logical and profitable use for lands that are worthless for agriculture, land classification is inevitably linked with forestry, and non-agricultural lands must be placed in forest reserves under State or National control.

State forestry thus becomes the goal around which the struggle rages. The champions of untrammelled license bitterly attack the advocates of State forestry, accusing them of a desire to lock up whole sections of good farming lands in forest reserves. Such ideas are absolutely foreign to the whole scheme of State forestry and nowhere can instances be cited where foresters have advocated the use of agricultural lands for State forest reserves. The differences arise entirely over the definition of the term "agricultural" land, and the methods to be used in determining its classification.

Foresters are the first to urge that land classification should *not* be left to them, but should be entrusted to soil experts familiar with agricultural practice. Even this procedure is fought by the opposition to classification. It will be found on analysis that the owners of large blocks of cut-over timberlands are opposed on general principles to any investigation of the character of lands in the vicinity of their holdings, for fear it will increase the difficulty of disposing of these lands at good prices to would-be farmers.

In Michigan the battle for land classification has raged for twenty years. Enormous areas, totalling at one time over a million acres, had reverted to the State for taxes. The State Forestry Board finally advocated the establishment of a Public Domain Commission which was to classify these State lands, set aside for forestry all lands of non-agricultural character, and sell the agricultural lands direct to settlers. A minimum of 200,000 acres of forest reservation was made mandatory by law, and the Commission reserved 235,194 acres, scattered in small bodies through fifty-four counties, in only four of which are there more than 10,000 acres of forest reserves. In reserving but a fraction more than the minimum fixed by law, and in following a policy of opening up and disposing of the remaining 750,000 acres of land which was once considered too poor to be worth the taxes, the Commission unquestionably reflected the wishes of the population of the counties affected, and acted in entire good faith for what they thought was the best interests of the State. But statements made by foresters in Michigan claim that much of this unreserved land was of doubtful agricultural value, and that the State has now lost a great opportunity to establish at a minimum of expense a system of State reserves sufficient to meet the future needs of the community. Apparently it may take another generation of effort and demonstration to awaken the Michigan public to the evils of promiscuous use of non-agricultural land for purposes for which it is not fitted. Michigan forest reserves may at some future period require considerable enlargement by purchase.

Wisconsin in 1903 and 1905 withdrew from sale all State lands north of Township Thirty-three and constituted therein a State Forest reserve. Power was given the State Forester to sell and exchange these lands in order to consol-

idate the areas, and to dispose of agricultural portions to settlers. Although the State pays taxes on these lands to the road and school funds, increasing opposition arose in the counties where the reserves were located, based on the argument that agricultural lands were being locked up and development thwarted. A Committee of the Legislature of 1914-15, after a thorough investigation which extended to Eastern States, reported:

"*First.*—That the general policy or idea of forestry is sound and a success commercially:

"*Second.*—It is not good policy to permit attempts to be made to induce settlers with a view to home-making to go on lands not suited to agriculture;

"*Third.*—There are thousands of acres of land in northern Wisconsin which, on account of poor character of the soil and its rough nature will not be used for farming either in this generation or several to come. This can be said without detracting from the agricultural possibilities of the section in which they are located. Agricultural writers say that 25 per cent of all lands in the northern half of the State are unsuitable for the growing of crops. This would give 3¼ million acres of possible forest lands."

The report presents many other striking facts which abundantly prove the economic wisdom and conservatism of the State's policy of land reservation, and recommends the continuation of the system. Meanwhile, a suit brought against the State to test the constitutionality of the law of 1905 which empowered the State to sell and exchange State school lands, has been decided adversely and the adjustment of this matter will greatly hamper and retard the entire State policy. Previous to this agitation, Wisconsin had appropriated $50,000 per year for five years to purchase additional lands for State Forest reserves. These purchases are now suspended. The determination of the entire future policy of Wisconsin is dependent on recognizing the fundamental necessity for scientific land classification, and a willingness on the part of the people of the State to support and abide by such classification.

In Minnesota, in spite of the progress made in State fire protection, following the Hinckley and Baudette fires, the interests hostile to land classification successfully thwarted all tentative efforts to secure State Forest reserves, although the State owns several million acres of land which should be examined and classified. Much of this land, in northeastern Minnesota is solid granite ledges, or is filled with boulders and never by the greatest stretch of the imagination could be called agricultural. Yet such is the fear of land speculators, lumbermen owning cut-over lands, and real estate men, of the principle of honest classification, that even the existence of these great bodies of granite rock is strenuously denied. The Minnesota Forestry Association succeeded in the last general election in arousing the public conscience to such an extent that a constitutional amendment was adopted, giving the Legislature permission to classify and reserve non-agricultural State lands. At once the opposing interests took alarm. The usual misrepresentations were repeated to the effect that the classification sought to tie up agricultural lands. In an effort to cripple the State Forest Service, inspired apparently by the idea that if this Service were crippled the movement for land classification would be nipped in the bud, the Senate Finance Committee cut the State appropriation for forest fire protection in two, thus seeking to revert to the conditions existing previous to the Baudette fire.

A bill appropriating $25,000 for land classification was summarily rejected by the legislature, thus nullifying the expressed wishes of the people of the State.

American civilization has much to learn, and one of the most fundamental of these lessons is a recognition of existing economic conditions and the protection of her citizens against unbridled exploitation. If land is unfit for agriculture, no amount of misrepresentation will change its character, or aid the unfortunate settler who acquires it to make a decent living. But once such lands are devoted to the legitimate purpose of timber production, all true agricultural lands in the vicinity are benefited by the general uplift of

the economic status of the entire community. Foresters have realized this for two decades and have borne the heat and odium of the fight for better civilization. How long must they continue to fight alone?

HOW OLD WAS IT?

MR. Paul R. Strain of Worthmore Farm near Wellsburg, West Virginia, writes AMERICAN FORESTRY that in blasting on the farm of E. C. Carter near his place, an ax mark was observed on the heart of a quarter section of an oak stump thrown out by the explosives. The stump had been cut long enough to be quite dead and was about 26 inches in diameter where cut off. The ax marks uncovered by the splitting of the stump from the blasting out had been overgrown with fully 8 inches of new wood. The young tree when chopped into must have been about 8 inches in diameter. An opposite section of the stump shows a sloping cut of good size but no ax marks are visible.

"The forest in which the stump was," writes Mr. Strain, "had been cleared less than ten years ago but the stump gave me the impression of having been dead much longer, and all through it's interior it is what we call around here, 'badly doted.' Nevertheless, I underestimated the soundness of it when I loaded only four sticks of dymanite under it, the explosion leaving the shattered quarters in the ground and thus making possible the discovery of the ax marks.

"One very impressive thing is evidence of the very thin edge of the cutting tool which made the mark. Few axes nowadays are ground so thin as it must have been.

"There were few if any settlers in this part of Virginia in 1780, which is about the time of my great-grandfather taking up land here, so it is interesting to conjecture just when and by whom the marks were made. I do not believe it is possible to count the annual ring growth until the wood is dressed down smoother than the blast left it.

"Evan Hindman, who has cut a good deal of timber in this section of Brooke County, West Virginia, stated on viewing this specimen, that he had seen similar old ax marks on trees he had felled, even more deeply overgrown with new wood than this one, but he did not state what varieties of trees they were."

TO EACH MEMBER:

We wish to double the membership of the Association. Will you help? Will you get one friend to join? The additional revenue will enable us to do important work for forestry. (See Editorial on page 670.)

You should be proud to recommend the Association and AMERICAN FORESTRY to your friends. Get a new member NOW. We must increase our membership and we need your help.

Application blank opposite page 607.

AMERICAN FORESTRY ASSOCIATION.

BUILDING BIRD HOUSES*

By NED DEARBORN,
Assistant Biologist United States Biological Survey

THE birds which adapt themselves to living in bird houses, and the dimensions to be observed in constructing these houses are given in the following table. These dimensions should be carefully observed in erecting the houses.

Birds may be gathered about us in all seasons of the year with ease and certainty merely by offering what they desire. In winter they are often pushed for food, and if we supply this need they will report daily at the lunch counter and help

DIMENSIONS OF NESTINGS BOXES FOR VARIOUS SPECIES OF BIRDS.

Species.	Floor of cavity.	Depth of cavity.	Entrance above floor.	Diameter of entrance.	Height above ground.
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Feet.*
Bluebird	5 by 5	8	6	1½	5 to 10
Robin	6 by 8	8	(1)	(1)	6 to 15
Chickadee	4 by 4	8 to 10	8	1⅛	6 to 15
Tufted titmouse	4 by 4	8 to 10	8	1¼	6 to 15
White-breasted nuthatch	4 by 4	8 to 10	8	1¼	12 to 20
House wren	4 by 4	6 to 8	1 to 6	⅞	6 to 10
Bewick wren	4 by 4	6 to 8	1 to 6	1	6 to 10
Carolina wren	4 by 4	6 to 8	1 to 6	1⅛	6 to 10
Dipper	6 by 6	6	1	3	1 to 3
Violet-green swallow	5 by 5	6	1 to 6	1½	10 to 15
Tree swallow	5 by 5	6	1 to 6	1½	10 to 15
Barn swallow	6 by 6	6	(1)	(1)	8 to 12
Martin	6 by 6	6	1	2½	15 to 20
Song sparrow	6 by 6	6	(2)	(2)	1 to 3
House finch	6 by 6	6	4	2	8 to 12
Phoebe	6 by 6	6	(1)	(1)	8 to 12
Crested flycatcher	6 by 6	8 to 10	8	2	8 to 20
Flicker	7 by 7	16 to 18	16	2½	6 to 20
Red-headed woodpecker	6 by 6	12 to 15	12	2	12 to 20
Golden-fronted woodpecker	6 by 6	12 to 15	12	2	12 to 20
Hairy woodpecker	6 by 6	12 to 15	12	1½	12 to 20
Downy woodpecker	4 by 4	8 to 10	8	1¼	6 to 20
Screech owl	8 by 8	12 to 15	12	3	10 to 30
Sparrow hawk	8 by 8	12 to 15	12	3	10 to 30
Saw-whet owl	6 by 6	10 to 12	10	2½	12 to 20
Barn owl	10 by 18	15 to 18	4	6	12 to 18
Wood duck	10 by 18	10 to 15	3	6	4 to 20

[1] One or more sides open. [2] All sides open.

to relieve the tedium of our indoor life. In summer they care less for food provided by their human friends, and other means must be sought to attract them about the home. They appreciate fresh water for bathing and drinking. A shallow pool of varying depth, if only a foot across, becomes on hot days a center of attraction for all the birds in the vicinity, and it may be made with little effort and material; only a small amount of cement is required, or, if that be lacking, a pan with stones in it set in the ground will be equally serviceable. Trees, shrubs, and vines bearing fruit relished by birds are great attractions in their season.

Birds are desirable about premises not only on account of their beauty and song, but because of their economic worth. They are especially useful as insect destroyers during the breeding period, when they have to work early and late to obtain sufficient food for their nestlings, and their movements at this time are more

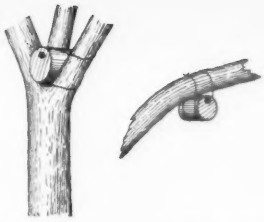


FIG. 1.—Tomato can with circular piece of board fitted in one end, to make house for bluebirds or wrens.

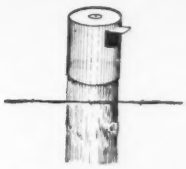


FIG. 2.—Tomato can, with one end removed, fastened to top of post. Hole cut in side for entrance. Suitable for bluebirds or wrens if put in shady place.

FIG. 3.—Gourd for martins.

FIG. 4—Gourds arranged for martins.

interesting than during any other season. There is, therefore, a double purpose in offering them special nesting facilities. If mud is available, swallows, robins, and phœbes will found and wall their nests with it. If we put out feathers, bits of wool, or twine, a dozen different kinds of birds will make use of them. If we furnish safe retreats in which they can rear their young comfortably, most of them will be occupied. In fact no attraction for summer birds is more effectual than a series of houses suited to the needs and habits of the various kinds of house birds.

A few years ago only four species were commonly regarded as house birds—the house wren, the bluebird, the tree swallow, and the martin. Since the movement to protect birds and make neighbors of them began, however, their natures and needs have become better understood, and it is now known that many other species will avail themselves of houses constructed for them by their human friends. The practice of erecting bird houses in this country, while now nation-wide, is not so common and uniformly distributed as it should be, and more extended provisions of this nature can not fail to result in a largely increased number of house birds.

HOUSE BIRDS INCREASING IN NUMBER

The habit of nesting in birds houses has been adopted by individuals of many species which would not ordinarily be expected to make use of such homes, and this may be taken as indicating that it will become more general from year to year as facilities are afforded and as the number of birds hatched in houses increases.

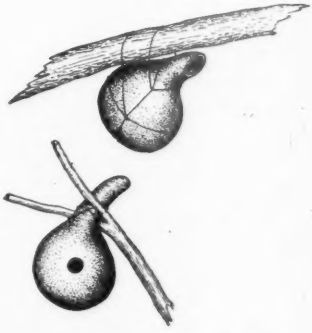
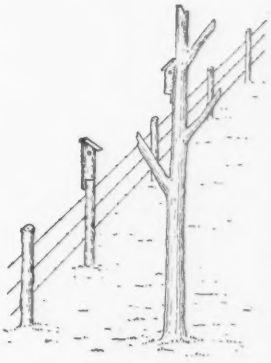


FIG. 5.—Gourds for wrens or bluebirds.

FIG. 6.—House made from hollow log.



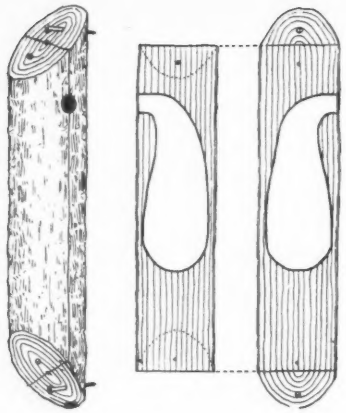


FIG. 7.—Log split and halves marked to be gouged out to form a cavity. Halves to be screwed together. Top should be covered with tin or zinc.

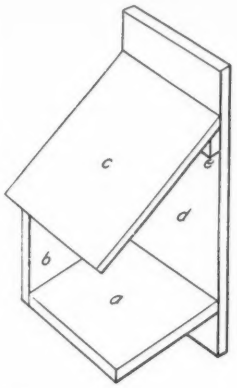
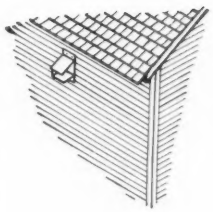


FIG. 8.—Outdoor nest shelf.



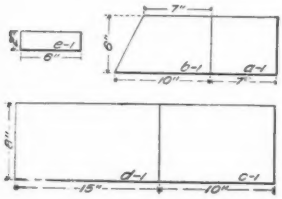
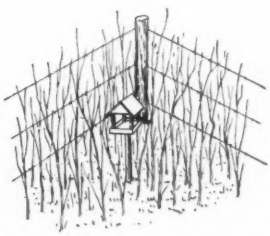


FIG. 9.—Diagrams for outdoor nest shelf shown in figure 8.



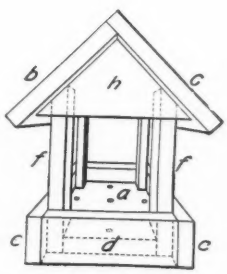


FIG. 10.—Nest shelter.

That western wrens and bluebirds should take as naturally to artificial shelters as did their eastern relatives was to be expected. On the other hand, the use of houses by birds which until recently had persistently ignored them is surprising, and must be considered a victory for those who have studiously attempted to enlarge their circle of feathered neighbors.

Woodpeckers, nuthatches, and titmice excavate their own houses, usually new ones each year, leaving the old homes to less capable architects. Builders of artificial houses generally go to the woodpecker for designs, and by varying styles to suit the tastes of different kinds of birds, have been rewarded

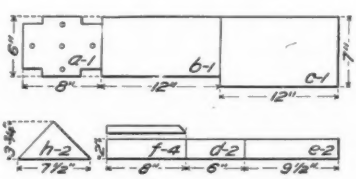


FIG. 11.—Lumber diagrams for nest shelter shown in figure 10. Thickness of boards ¾ inch.

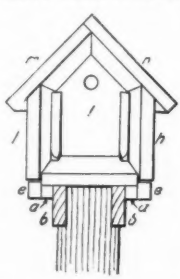


FIG. 12.—Cross section and interior view of front half of house for swallows and bluebirds.

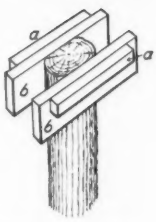


FIG. 13.—Foundation for house shown in figure 12.

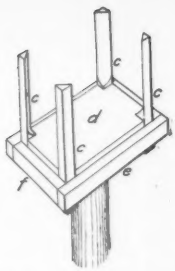


FIG. 14.—Floor and posts added to foundation shown in figure 13.

by such tenants as chickadees, tufted titmice, white-breasted nuthatches, Bewick and Carolina wrens, violet-green swallows, crested flycatchers, screech owls, sparrow hawks, and even some of the woodpeckers, the master builders themselves. Flickers readily accept houses built according to their standards. Red-headed and golden-fronted woodpeckers are willing occupants of artificial houses, and even the downy woodpecker, that sturdy little carpenter, has, in one instance, at least—this according to Jefferson Butler occurring on the Ford farm, near Detroit, where great pains have been taken to provide for birds—deemed such a home a satisfactory abode in which to raise a family. Shelters having one or more sides open are used by birds which would never venture into dark houses suited to woodpeckers. They have been occupied by robins and brown thrashers, and, in one instance, by a song sparrow. This song sparrow record is another surprise from the Ford farm, announced by Mr. Butler, which is very encouraging to those experimenting with bird houses.

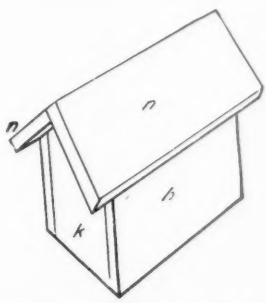


FIG. 15.—House ready to place over floor and posts as shown in figure 14.

The number of house birds may be still further augmented as time goes on. All of the commoner woodpeckers are likely to be included, as are several of the small owls and wrens, and a few of the wild ducks, as the golden-eye. The wood duck is already known to use nesting boxes. Houses set close to streams in the western mountains will probably be occupied by ousels or dippers. Florida grackles sometimes breed in flicker holes and may be expected to occupy houses now and then. In every locality having trees there is a group of birds ready to appropriate houses when they have the opportunity.

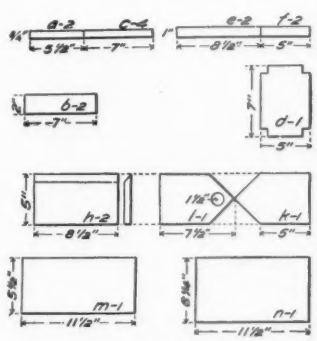


FIG. 16.—Lumber diagrams for building house shown in figures 12 to 15. Thickness of boards ¾ inch.

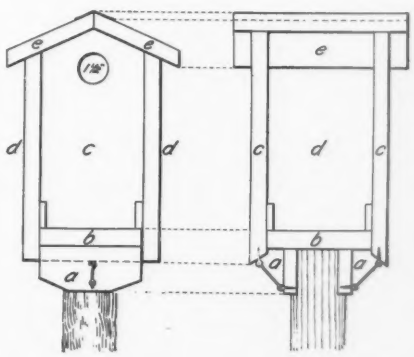


FIG. 17.—Diagrammatic drawings of bluebird house. This house can be removed from its floor by unfastening two wire hooks.

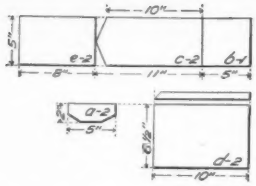


FIG. 18.—Lumber diagrams of house shown in figure 17. Thickness of boards ¾ inch.

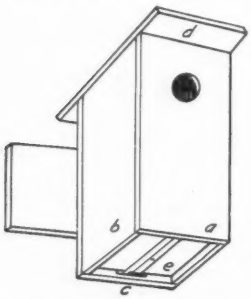


FIG. 19.—Style of house suitable for sparrow hawks, screech owls, bluebirds and wrens. Designed to be placed in trees. Bottom can be removed by turning button.

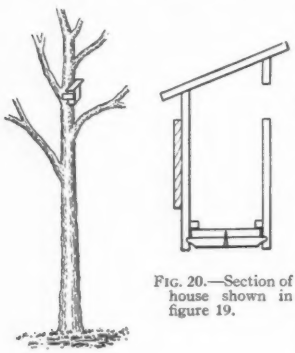


FIG. 20.—Section of house shown in figure 19.

SUGGESTIONS FOR CONSTRUCTING HOUSES

House birds differ decidely in their requirements. For those which usually excavate homes for themselves, the diameter of the entrance and the depth and diameter of the cavity must be in accord with their specific standards. Some birds are satisfied with almost any sort of a lodging. Bluebirds and wrens, for example, are content to build in tomato cans, although chicadees and nuthatches disdain them. Wood is a better building material than metal or earthenware. Entrance holes should be countersunk from the outside to exclude rain. Heads of nails and screws should be set rather deeply and covered with putty. All houses should be easy to open for cleaning. A perch at the entrance is unnecessary and may even be an objection, as it is frequently used by English sparrows while they twitter exasperatingly to more desirable occupants. To provide for proper ventilation a row of small holes is sometimes bored just beneath the eaves, but there should never be a ventilating hole lower than the entrance, and joints should be made tight, as drafts of air are dangerous. In case there is danger that rain may be driven in through the door, a small drainage hole, which will be covered by the nest, may be made in the middle of the floor.

The appearance and durability of houses are improved by a coat of paint. A neutral shade of green or gray is suitable for houses mounted in trees, while those on poles, being conspicuously placed, lend themselves harmoniously to the landscape when painted white.

The dimensions of nesting boxes shown in Table 1 are taken from the experience of successful builders and from measurements of woodpecker holes.

HOUSE PLANS

Possibilities in the way of improvising bird houses with very little work are suggested in Figures 1 and 2. Ordinary tomato cans treated in either of the ways here indicated will be tenanted by wrens and bluebirds. The cans ought always to be

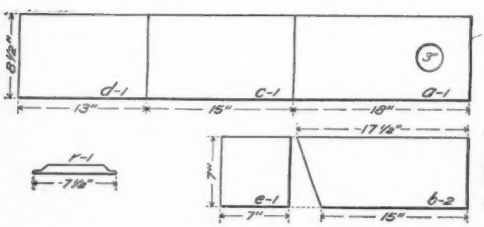


FIG. 21—Diagrams of house shown in figure 19 for sparrow hawks and screech owls. Thickness of boards ¾ inch.

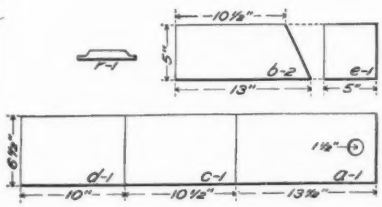


FIG. 22.—Diagrams of house shown in figure 19 for bluebirds. Thickness of boards ¾ inch.

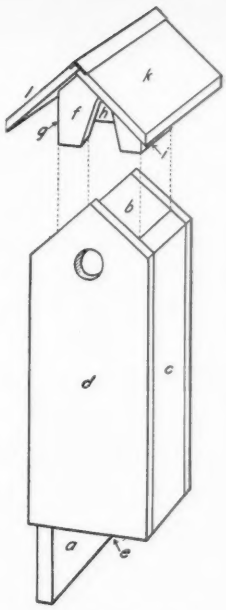


FIG. 23.—Flicker house to be mounted on post or stub of tree.

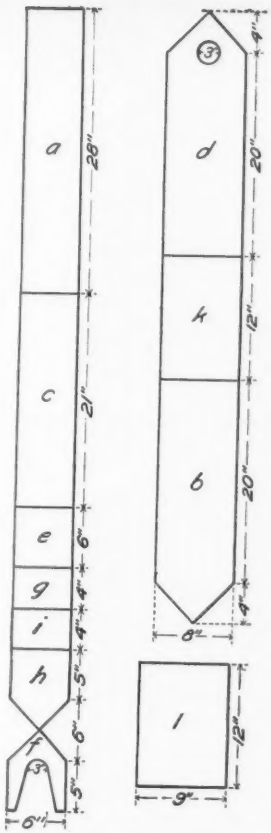


FIG. 24.—Lumber diagrams for flicker house shown in figure 23. Thickness of boards ¾ inch.

placed in shaded places as the metal becomes very hot in the sun.

Bird houses in the Southern States have long been made from gourds. The entrance is in the side and a drain hole in the bottom, as shown in Figure 3. A piece of wire through the neck for mounting it completes the house. A number of gourds thus prepared and strung on a pole seems to make a satisfactory tenement house for a colony of martins. Used singly they are equally well adapted to wrens and bluebirds. While gourds are not durable when exposed to the weather they are easily replaced.

Ordinary wooden boxes, if clean, can be made into bird houses by merely nailing on a cover and cutting out an entrance hole. Such makeshifts are rarely weatherproof and are never pleasing to the eye. Branches containing real woodpecker holes, when obtainable, are perhaps the best attraction that can be offered most house birds in the breeding season. By carefully fitting such a branch to a fruit or shade tree its foreign origin

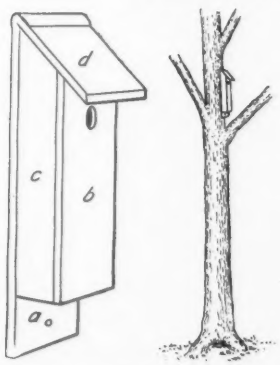


FIG. 25.—House to be placed in tree for woodpeckers, chickadees, nuthatches or titmice.

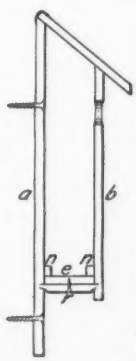


FIG. 26.—Section of house shown in figure 25.

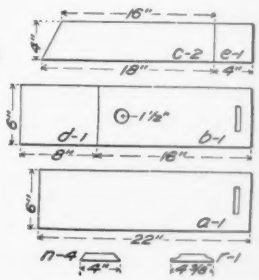


FIG. 27 Lumber diagrams of house shown in figure 25, suitable for downy woodpecker. By reducing size of entrance it becomes right for titmice and nuthatches. Thickness of boards ¾ inch.

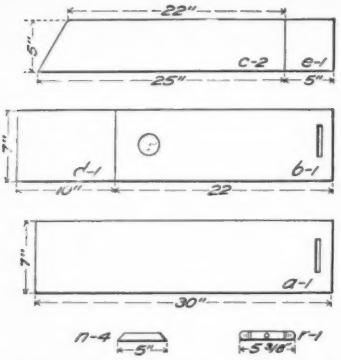


FIG. 28.—Lumber diagrams of house shown in figure 25, suitable for red-headed woodpecker. Thickness of boards ¾ inch.

will scarcely be noticed. The house shown in Figure 6 is suitable for use in trees. It is made from a log or large branch, hollowed by decay, and fitted with a top and bottom as illustrated in the figure. The cover is to go on after the log is fastened in place. Either the top or bottom should be removable. Methods of doing this are shown in Figures 23 and 26. Another way of making a log house is to split a straight-grained log 2 feet or more in length through the middle and then cut out a cavity with a gouge. The excavations in the two halves can be made to match exactly by means of a pattern or template having the size and shape desired for the proposed cavity through the plane of cleavage. Figure 7 shows the appearance of such a house and how to place the template symmetrically on each half of the stick. The top of this house should be covered with tin or zinc to keep out moisture. The halves should be fastened together with screws to allow the house to be taken apart and cleaned.

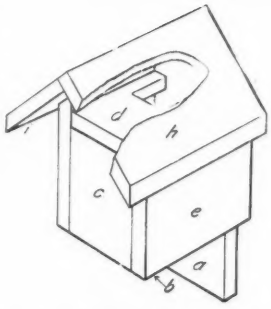


FIG. 29.—House for wrens and house finches. Roof broken to show interior.

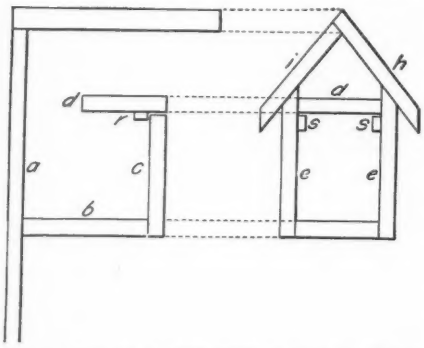


FIG. 30.—Sections of house shown in figure 29. Upper floor removable.

Phœbes like to nest about buildings, and a simple shelf under the roof of a porch or shed is all they require. If, however, it is desirable to have them stay outside,

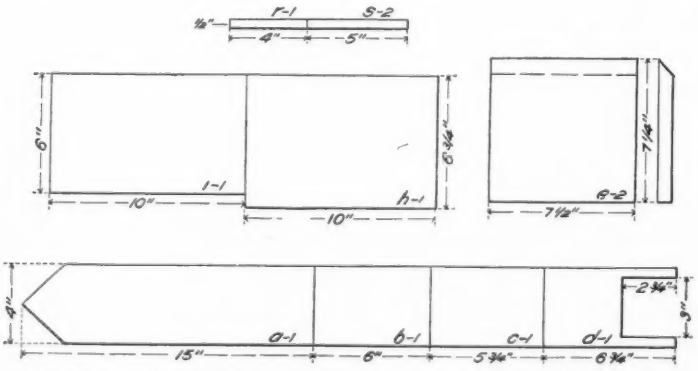


FIG. 31.—Lumber diagrams for house shown in figure 29. Thickness of boards ¾ inch.

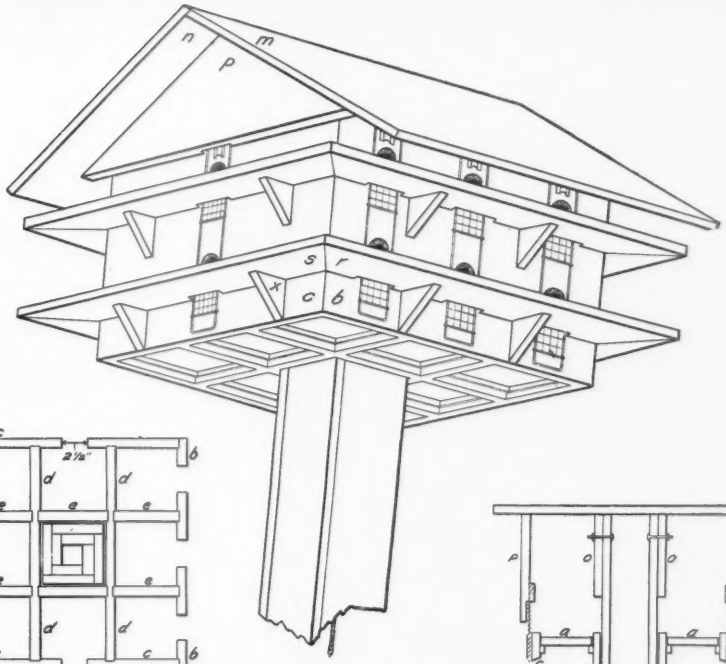


FIG. 32.—Martin house.

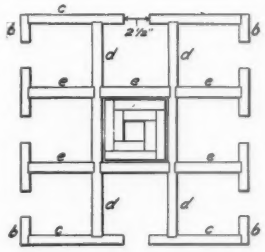


FIG. 33.—Horizontal section of martin house.

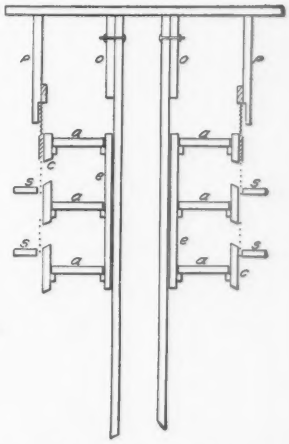


FIG. 35.—Longitudinal vertical section of martin house; lowered, and doors closed.

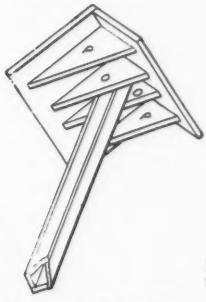


FIG. 36.—Roof of martin house attached solidly to pole.

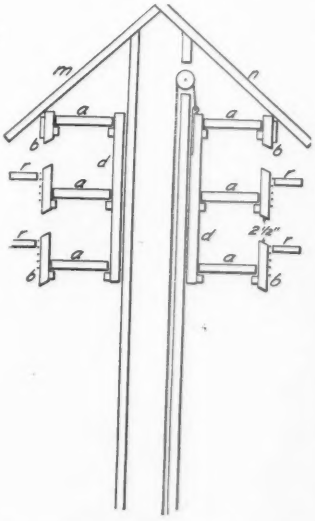


FIG. 34.—Cross vertical section of martin house; raised and doors open.

the shelf must be provided with a roof. Figure 8 shows a shelf shielded from the weather by one wall and a roof. This shelf if placed high under the eaves of a two-story building may attract barn swallows; phœbes and robins also are likely to build upon it if it is not less than 8 feet from the ground. In some cases it will be advisable to leave only one side open.

A nest shelter designed to be placed in shrubbery for catbirds, brown thrashers and song sparrows is shown in Figure 10. As it requires little lumber or labor, one may well be placed in

every patch of weeds or brush frequented by these birds. Fastened to a large horizontal branch or in a crotch of a tree it is likely to be used by robins.

The house shown in Figures 12 to 15 is designed to be set on a pole or a tree stub for the use of swallows especially. It can be cleaned by simply lifting the box from its base. Bluebirds and wrens, as well as swallows, nest in this style of house though they prefer a deeper cavity. Another pole house is shown in Figure 17. This is essentially after the woodpecker model and is suitable for bluebirds. By releasing the hooks which fasten the box to the base, cleaning is easy. Figure 19 illustrates a house to be attached to a tree. It can be opened for cleaning by turning a button and removing the bottom. This house is easy to build and if suitably proportioned is adapted to a great variety of birds. Plans are furnished for two sizes—one for bluebirds and the other for screech owls or sparrow hawks.

The flicker house shown in Figure 23 is designed to be placed on a post or the stub of a tree. The roof can be lifted in the same way that a stopper is removed from a bottle. A house suitable for members of the woodpecker family and also for nuthatches and titmice, including chickadees, is shown in Figure 25. It is attached to boles of trees. The bottom is removable, as appears in Figure 26.

FIG. 39.—Proper way to make first "hitch" of rope on hook of counterweight.

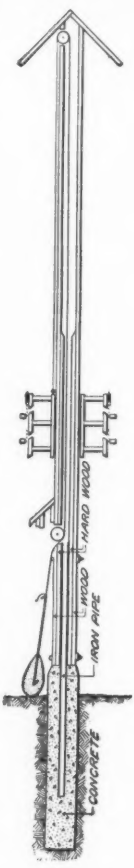


FIG. 37.—Martin house lowered; doors closed.

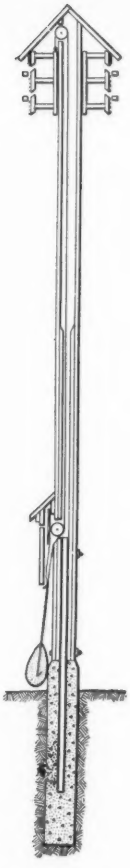


FIG. 38.—Martin house in place: doors open.

Figure 29 shows a house designed for wrens and house finches. For wrens it may be placed on a tree or fence post. If attached near the eaves of a building, house finches or wrens will use it. The front gable is open, entrance to the room below being through the rear of the upper floor. This house can be opened for cleaning by lifting out the upper floor.

Martin houses are built on the apartment plan to satisfy the social instinct so marked in martins but so conspicuously lacking in most other birds. They usually contain not less than ten or twelve rooms and for this reason are relatively complicated, especially if they are minatures of elaborate buildings, as is often the case. Like the single room houses, they should be easy to inspect and clean from top to bottom and, if possible, should be made proof against the English sparrow. An attempt to combine these essentials in a plain house is illustrated in Figure 32. The body of this house slides upon its pole, to the top of which the roof is solidly attached (Figure 36). The pole is hollow and through it runs a cord by which the house is raised and lowered. The floors are all removable by lifting up. When the house is out of contact with the roof all of the entrances are closed by gates actuated by springs, the gates moving upward to close, and being kept down and open by pressure against the roof. By means of this device sparrows may be kept out of the house until martins are due to arrive, or if they get in when the house

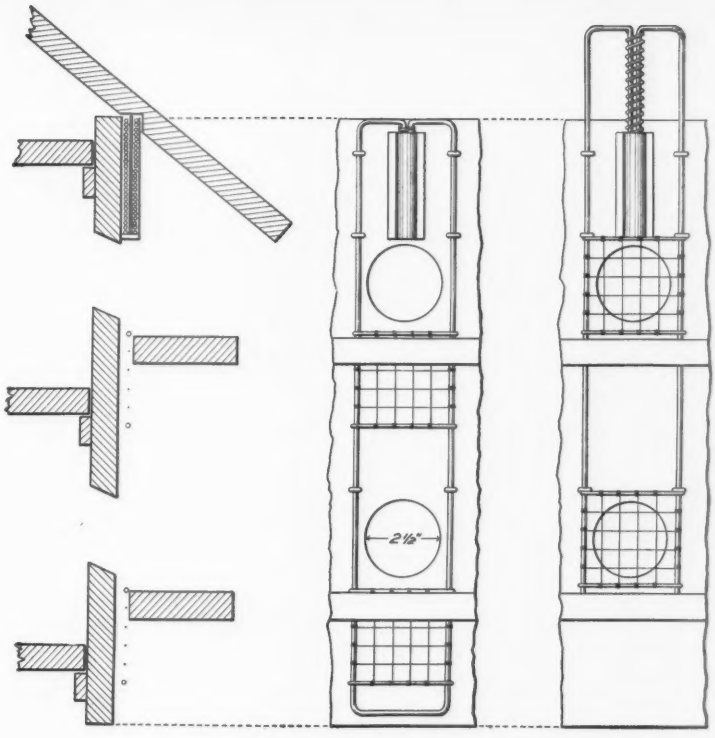


FIG. 40.—Details of construction and operation of gates.

is open they can be trapped by suddenly lowering it. The pole shown here is made from hardwood boards put together with screws. The concrete base has a core of 2-inch iron pipe which extends upward far enough to make a firm connection with the upper part on which the house slides. A heavy weight is employed to hold the house hard against the roof. By passing the cord around the hook of the weight exactly as shown in Figure 39 and pulling it upward until the weight is clear of the ground, it can easily be held without slipping while a more secure knot can be tied. A hook less wearing to the cord and fully as serviceable may be made from an acute natural crotch of oak or other hardwood instead of iron. Where this house is exposed to strong winds it may be advisable to attach guy wires to corners of the roof. The pole may be made of a single piece of 4-inch galvanized pipe, set in a concrete base. In this case the house should be a cylinder and the roof a cone.

*From a bulletin of the Biological Survey.

Campers More Careful

In northern Arizona, Utah, Nevada, southern Idaho, and western Wyoming, the fires on national forests set by campers have decreased in four years from nearly a third to approximately one-fifth. Lightning fires have increased from less than one-fourth to nearly one-half. The relatively larger proportion from lightning, however, is due partly to decrease in other causes.

EDITORIAL

$10,000,000 NEEDED FOR FOREST RESERVES

THE next Congress will be asked to provide for an appropriation of $10,000,000 for use at the rate of $2,000,000 a year to continue the purchase of land in the Southern Appalachains and White Mountains as Federal Forest Reserves. It is most important that the money be set aside for this purpose. It means much to the future of the whole Atlantic seaboard to have several million acres of non-agricultural land from most of which all merchantable timber has been removed, held in reserve under Government ownership, protected from fire and disease and perpetuated as productive forest land. All through New England and along the Southern Appalachians there is a very strong sentiment in favor of continuing the purchase of these forest growing lands and it is certain that Congress will be urged from many quarters to provide for the appropriation with as little delay as possible.

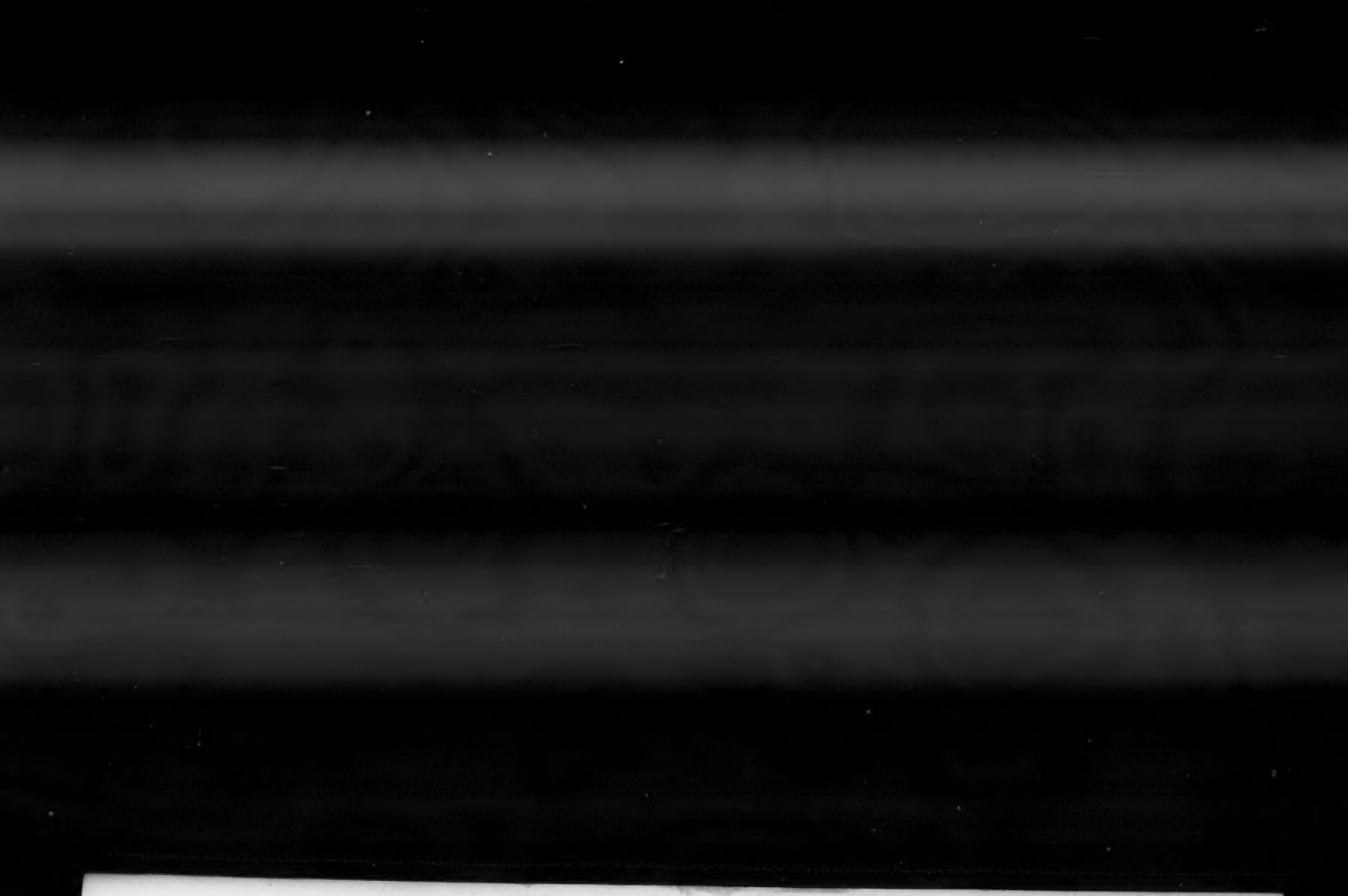
The present appropriations for the purchase of lands in the Southern Appalachian and White Mountains will cease with the fiscal year, that is on June 30, 1915. There is now available for further purchases about $1,000,000, which sum will be sufficient to carry the work to near the end of 1915. The area approved for purchase by the National Forest Reservation Commission, or already acquired, is 1,186,000 acres, the average cost of which has been slightly over $5.00 per acre with an additional expense of approximately 60 cents per acre for appraisals, surveys, title examinations and supervision. It is estimated by officials of the Forest Service that with the remaining one million dollars enough additional lands can be purchased to bring the total to more than 1,400,000 acres, with an average price not exceeding $6.00 per acre.

The work was started and has been carried on under the greatest difficulties as to surveys and titles. No other part of the country is believed to have titles so involved or to present so many boundary complications as do the Southern Appalachain Mountains in which the bulk of this work has been done. This in part accounts for the low price of the land and the relatively high cost of examinations, surveys and title work.

The Secretary of Agriculture in a report to Congress in 1907 recommended the purchase of 5,000,000 acres in the Southern Appalachians and 600,000 acres in the White Mountains. The National Forest Reservation Commission in its last report to Congress strongly approves of that recommendation, in fact adopts it as its working program, and recommends that Congress extend the appropriations for purchases through a further period of five years at the rate of two million dollars per year.

The American Forestry Association for eleven years labored to secure the legislation embodied in the Weeks law. It has closely watched the execution of the law under the National Forest Reservation Commission and the Department of Agriculture and the results which have been accomplished demonstrate fully the wisdom of the program which has been undertaken. Furthermore great good is being accomplished by the Government in putting the purchased lands immediately under administration so that they can be protected from fire and fully utilized as National Forests.

In view of the achievements accomplished in the way of purchases and in the administration of acquired lands the American Forestry Association considers it appropriate to give full support to the National Forest Reservation Commission in its recommendation to Congress for appropriations at the rate of two million dollars per year for a



further period of five years. This program will be actively urged at the next session of Congress and it is hoped that other associations and organizations, which so faithfully labored to start the movement for Federal purchases in the Appalachians, will give it active support now that it is well begun.

FORESTRY ON A FIRM BASIS IN NEW JERSEY

THROUGH a group of laws enacted by the legislature which has just adjourned, and after a State-wide discussion that has subjected the work of the Forest Commission to the closest scrutiny, the forest policy of New Jersey seems to be firmly established.

The most important act is that by which the Forest Commission, and its whole organization including the State Forester and State Firewarden, is consolidated with the Geological Survey, the Water Supply Commission and two park commissions in a Department of Conservation and Development. This new department is yet to be organized, but the intent of the statute is that forestry shall be advanced rather than retarded in any way.

The second act authorizes the Forest Commission (and its successor) to establish a patrol, at the cost of the responsible party, wherever an extraordinary fire hazard is created. The specific purpose of this is to guard the railroad exposure, which in parts of New Jersey is exceptionally serious.

The third measure is a complement to the second and authorizes the Forest Commission to require the disposal of brush and litter whenever it shall be accumulated in a way to be dangerous.

Neither of these control acts is rigid or mandatory but vests in the Forest Commission discretionary power to abate a nuisance.

For the present forestry in New Jersey is largely a question of fire control; behind that lie exceptional opportunities in management based upon the mild climate, warm soil, and unusual market conditions.

The modifications in the game laws which were desired, one of which was recommended by the Governor, have not been secured. The property owners of the State, therefore, continue to be exposed to the very serious hazard that is created every fall by the hunters.

A much-desired revision of the shade tree laws has also been secured. As New Jersey has been a leader in this direction the new act is likely to be of value outside the State as well as to its own municipalities.

Change in Address.

Members of the American Forestry Association are requested to send notification of any change in address so that the AMERICAN FORESTRY MAGAZINE and other mail will not be delayed in reaching them.

Such notices are desired before the 25th of each month so that the address may be changed for the monthly mailing of the magazine.

FOREST NOTES

The Pocono Protective Fire Association, of Monroe County, Pennsylvania, is following up its well tried methods to instruct the people of the community and to interest them in forest protection. It has repeated this year its offer of $25.00 as prize money for competition in essay writing on topics relating to forestry by the scholars of the County. Last year forty-two responded; this year there are sixty-five.

There is a two-fold object behind these school contests. First, to set the young people of the County to thinking about the subjects on which the essays are written; and, second, by interesting these scholars to awaken interest in the same subjects in the adult members of their families. That which interests the children becomes the talk of the household and cannot fail to influence, in some degree at least, the grown-ups.

With a similar object in view the directors of the Association for two years have got the fire wardens of the County together in March for an informal conference and a dinner. This year the meeting was held at the Inn at Buck Hill Falls, on March 20th; and twenty-three wardens were present. Mr. C. N. Thompson, one of the directors of the Association, and manager at the Inn, was the host, and entertained the entire company. Besides the fire wardens and the directors, the State Department of Forestry was represented by District Forester J. L. Strobeck and Forest Inspector George H. Wirt.

Mr. Wirt made the principal address, having come from Harrisburg for the occasion. Mr. Strobeck gave the wardens their instructions for the coming fire season, and there were addresses from others, including some of the wardens.

The whole affair was eminently successful, and there is good reason to regard these annual meetings and dinners as permanent institutions in Monroe County. They bring the men together in a social way and at the same time serve to impress upon them a sense of united action, and a realization that they are part of an organized body working for the good of the community and the State.

The nation-wide study of the lumber industry, which is being made jointly by the Department of Agriculture and the Department of Commerce, and the other industrial and technical investigations and experiments which have been carried on by the Forest Service in the last two years was discussed at a conference of Forest Service officials at Madison, Wis., on April 14 to 17. The Forest Service Laboratory, the Washington Office of Industrial Investigations, and each of the seven National Forest Districts was represented at the conference by specialists. Among the subjects for discussion were Cooperation of the Forest Service with industries, lumber distribution in the United States, utilization of low-grade lumber and mill waste, adaptation of manufacturing and grading to specific classes of consumers, unification and standardization of lumber grades, study and development of general markets for National Forest timber, mill scale studies, including technical methods, tallying, etc.; lumber depreciation, and the collection and compilation of lumber price data.

The information already collected by the Forest Service under some of these headings includes the most exhaustive data on the mechanical properties of wood ever collected by any agency in the world, and already has resulted in practical reforms and big savings to several of the important wood-using industries.

The American Sawmill Company has presented The New York State College of Forestry with a portable sawmill. This mill is to be set up at the College Experiment Station at Rockwell and it is expected that it will prove of considerable use in practical demonstration work for the students. Numerous small problems may be brought out in great detail with this equipment.

The State Ranger School at Wanakena of the College of Forestry at Syracuse opened its fourth successful year the first Tuesday in March with twenty men from all parts of the State who will take a year of practical training in the school, fitting themselves for such positions as forest guards, rangers, tree planting experts and forest estate managers. Mr. G. A. Gutches, formerly District Inspector of Forests of Saskatchewan, has just been brought in to take charge of the school and he will seek to make the school of especial service to the lumbermen and forest owners of the State. Mr. Gutches will be assisted by Professor E. F. McCarthy who will be in charge of the instructional work at the school. Both Director Gutches and Professor McCarthy are graduates of the Forest School of the University of Michigan and both have had wide experience in forest work for the United States Government in the West. Besides the experience with the United States Forest Service, Mr. Gutches has spent three years in charge of very important lines of forest work in Western Canada.

Receipts from grazing permits on the National Forests for the season of 1915 will contribute to the public revenues approximately $1,200,000, or about $200,000 more than last year, according to an estimate made from the allowances just authorized by the Secretary of Agriculture. The Forests this year will furnish forage for 1,983,775 cattle and horses, 8,747,025 sheep and goats, and 64,040 swine, the figures indicating a material increase of meat production on the government-regulated ranges.

The largest tract of California pine ever offered by the Government has been purchased by the Pelican Bay Lumber Company, of Klamath Falls. Its bid of $3 a thousand for the first unit of 85,000,000 feet on Four Mile Creek and $3.25 for the pine in the second unit of 297,000,000 on the Bear Creek water shed was found to be the highest when the bids were opened in Portland, Ore., April 10.

Arrangements have just been completed between the authorities of the public parks and public schools of the City of Binghamton, New York, and The New York State College of Forestry at Syracuse University for the making of a complete shade tree census of Binghamton. The work is outlined and the necessary material and instructions are furnished by The New York State College of Forestry in such a way as to make the field work of distinct educational value to the pupils in the public high schools. The information gathered will be used in the preparation of a shade tree map for Binghamton.

The State College of Forestry at Syracuse will cooperate during the coming spring with the State Education Department at Albany and the High Schools of the State in the development of various school forests and a Forest Day. This cooperation was furthered by means of a bulletin entitled, "The Planting of Forest Trees by the Public Schools of the State," a copy of this bulletin was sent to each High School in the State. Arrangements have already been completed with fourteen High Schools in the State in the matter of starting a school forest during the coming spring and each one of these schools will plant from 1,000 to 5,000 trees.

Secretary Lane has approved the plan to open Yellowstone National Park to automobiles this summer under regulations which will later be prescribed, and has fixed August 1 as the date for their admission. This is the only national park which automobilists have not hitherto been allowed to use. In 1913 the Interior Department threw open Yosemite National Park to motorists, under careful regulations, and it has resulted in a very much wider use of that park.

Mr. James A. Conners, of the James W. Sewall office, has been appointed City Engineer of Old Town, Maine.

BOOK RECEIVED

THE LOG OF A TIMBER CRUISER, by William Pinkney Lawson, $1.50. (Duffield & Co., New York.)

Mr. Lawson was formerly an Assistant Forest Ranger in the United States Forest Service and in this book, which has thirty-two pages of illustrations, he gives an accurate and vivid account of the field work of the United States Forest Service. He not only tells of the adventures of an actual cruising party in the Gila National Forest, but gives also an intensely interesting description of Forest Service field work; and of what it means to be a forester—of his difficulties, triumphs, pleasure and satisfactions. The book is full of the best kind of out-of-door spirit, and the experiences of the cruising party are described with a humor and understanding that will make the book fascinating to those who now know the Forest Service only as a name, and at the same time it is an intimate record for all Forest Service men.

Chestnut Quarantine

The chestnut bark disease has become so serious that in the opinion of the United States Department of Agriculture it is desirable to quarantine New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Ohio, North Carolina, Iowa, and Nebraska, or such portions thereof as may be found to be essential. A public hearing on this question will be held in Washington at 10 o'clock on May 18th. The proposed quarantine will restrict the movement from this territory of chestnut nursery stock and chestnut lumber with the bark on.

CANADIAN DEPARTMENT

By Ellwood Wilson

The most important happening of the month, from a forestry standpoint, is the announcement by the Hon. Frank Cochrane, Minister of Railways and Canals, that he has instructed the Management of the Intercolonial and other Dominion Government Railways, to put into force the fire protection regulations imposed on the other railways of Canada by the Dominion Railway Commission, thus removing a very curious and harmful anomaly. Mr. Cochrane is to be congratulated and his common sense and public spirit will receive the thanks of all those interested in the conservation of the forests of Eastern Canada and all timber owners in that section. This matter was first brought to Mr. Cochrane's notice by Sir Clifford Sifton, Chairman of the Conservation Commission, and he also deserves credit for this step forward.

If the National Transcontinental Railway is taken over and operated by the Government the Dominion Railway Commission's Fire Protection Regulations will be put in force. The Grand Trunk Pacific has practically refused to operate this line constructed by the Government and in order to keep the right-of-way from falling to pieces it must be operated.

In order to stimulate the revenues the British Columbia Government have again amended the Forest Act so as to permit of the reinstatement of any timber licenses that have lapsed since the thirty-first of December, 1906.

The Government has appointed Mr. H. R. MacMillan, its Chief Forester, special commissioner to proceed to Australia, to study market conditions for British Columbia timber and to arrange with the Australian Government for better terms and a broader market. He will also do everything possible to advertise British Columbia woods and explain their uses and advantages. No better man could possibly have been selected for such a mission and we wish Mr. MacMillan a pleasant and most successful trip.

The St. Maurice Lumber Company is preparing to construct several miles of telephone lines through their limits this spring.

Mr. J. M. Dalton, of the Gres Falls Pulp & Paper Company, has just returned from a trip to St. Jaques to see the working of a gasoline log hauler and returned much impressed with what he saw. One hauler was taking five large sleighs carrying about 7,000 board feet per trip and making three trips per ten-hour day on a 7 mile road. There was no trouble whatever in getting up even long steep hills but some difficulty in going down as it was hard to keep the sleds used as trailers from getting across the roads and otherwise out of line. The machine would take the five loaded trailers up hills that a horse could not have hauled a bunk load on and in breaking out branch roads the machine would take its load through loose snow that would completely stall a horse drawing an empty sled. It was doing the work of twenty-five horses.

The spring work of the St. Maurice Forest Protective Association has commenced and every effort will be made to keep the fires down to a lower figure than ever this season. Plans are matured and everything is in readiness. A new departure will be made this spring in that a special ranger will be assigned to each log drive and it is hoped that this will cut out one of the commonest sources of fires. Several miles of new telephone will be built and one of the rangers working in a settled district will probably be supplied with a Ford automobile.

A meeting of the lumbermen on the Upper Ottawa river was held recently and the formation of the Upper Ottawa Forest Protective Association was discussed and most of the lumbermen were in favor of it. At a later meeting however it was decided to wait for another year. Evidently the limit holders on the Upper Ottawa, being further back in the woods are less progressive than their brethren lower down the river, who formed the Lower Ottawa Association last spring and were much pleased with its success during the past very dangerous season.

Mr. Robson Black has been appointed Secretary of the Canadian Forestry Association to take the place vacated by the resignation of Mr. James Lawler. Mr. Black is a graduate of Queen's University and was for seven years on the editorial staffs of the Montreal Herald, Montreal Star, Ottawa Citizen and Toronto News. Two years ago he went into magazine work and was Editor of the Financial Press Service of Canada. He was also publicity manager for the Conservative Party in Ontario. Mr. Black will have ample scope for his talents and energies and the Association is expecting much from him.

Mr. G. C. Boyd, of Bobcaygeon, Ont., who has large lumber interests spent a few days in Grand Mere, looking over the forestry work of the Laurentide Company.

Messrs. G. D. McKay and Arnold Hanssen have been elected active members and Mr. B. K. Ayers an associate member of the

Canadian Society of Forest Engineers. Mr. McKay was the first Chief Fire Warden of British Columbia and is now Chief Timber Inspector of that Province. Mr. Hanssen is a graduate of the Royal Fredriks University of Norway and of the Norwegian Government School of Forestry and has been with the Laurentide Company for three years. Mr. Ayers is Yale Forest School M. F. 1913 and worked for the Society for the Protection of The New Hampshire Forests and for the State of New Hampshire, and later for the Laurentide Company and is now with The Ansonia Forest Products Company at Ansonia, Conn.

The following are the officers of the Canadian Society of Forest Engineers, just elected to serve for three years: President, Clyde Leavitt of Ottawa, Forester to the Dominion Conservation Commission and Chief Fire Inspector for the Dominion Railway Commission; Vice-President, H. R. MacMillan, Chief Forester of British Columbia; Secretary-Treasurer, Ellwood Wilson, Forester to the Laurentide Company, Ltd.

Mr. B. M. Winegar, Forester to the Operating Department, Eastern Division of the Canadian Pacific Railway, will be married in June to Miss Dohan, of Montreal.

Mr. J. E. Rothery, of the firm of Vitale & Rothery, of New York, has been elected a Fellow of the Royal Geographical Society.

Mr. M. A. Grainger, of The British Columbia Forest Service, has written a most interesting book which should appeal to every lover of the outdoor life, called a "Woodsman of the West."

The Dominion Parks Branch is doing all in its power to make the parks and forest reserves of Canada known and to make them of use, interest and help to all the people. Four illustrated pamphlets have just been issued by the Superintendent, Mr. J. B. Harkin: "Just a Sprig of Mountain Heather," "Glaciers of the Rockies and Selkirks," "Classified Guide to Fish and their Habitat in the Rocky Mountains Park," and "The Nakimu Caves." These are very interesting reading and anyone who wants a delightful trip for the summer should send for them. There are six scenic and four animal parks already established in Canada, all of them well worth a visit and they are not surpassed by any European scenery. Many of the glaciers are easily accessible to tourists and every type of Alpine scenery can be found. Six varieties of game fish are found in the Rocky Mountains Park, the lake trout of Lake Minnewanka sometimes weigh up to 40 pounds and the brook trout planted have excellently adapted themselves. Ponies are used in going from lake to lake and the man who loves fishing can have a delightful trip. Caves are a feature of the Glacier Dominion Park and the Government is constantly making them more accessible to the public.

A novel type of fire poster is being introduced in these Parks, made of enameled sheet iron with a picture of a forest fire at the top. These are very striking and are durable.

Dr. C. Gordon Hewitt, Dominion Entomologist, says that the depredations of bark beetles in British Columbia have been very serious and further studies of these insects and ways to combat them will be made during the coming summer. Further studies of the parasites of the spruce bed worm will be made. This insect, which has been serious in Eastern Canada for the past five years seems to be dying out.

Forest Assistant L. C. Tilt has been appointed to the Manitoba Inspection Office at Winnipeg.

Mr. C. F. McFayden, who resigned his position with the British Columbia Forest Branch, has been appointed Forest Assistant under the Dominion Service and will probably be assigned to the Athabasca Division of the Rocky Mountain Forest Reserve.

Nineteen employes of the Dominion Forest Branch have enlisted for the war, among them Messrs. G. E. Bothwell, A. E. Parlow, J. B. Mitchell and F. McVickar, members of the Canadian Society of Forest Engineers.

The Forester's Club of Ottawa has been active lately and during the latter part of February had a very interesting meeting at which Mr. R. H. Campbell, Director of the Dominion Forest Branch told of his trip to Europe and of his discussion with Dr. Schlich on the Canadian Forests.

The Pulp and Paper Association, of Canada has formed a Technical Section which will collaborate with the Dominion Forest Products Laboratory.

The water of the River St. Lawrence is exceptionally low this spring and the gradual but steadily decreasing amount of water is said to be due to the denuding of the watersheds by cutting and fire. This is a very serious matter as it affects very materially the trade of Montreal and thus of the whole Dominion.

A very interesting decision has just been rendered by the Canadian courts which holds that a man employed in the woods is not a workman under the Workman's Compensation Act and if injured must seek compensation under the common law. He is classed with agricultural laborers. This seems logical as forestry is really a department of agriculture.

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